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AGRICULTURAL MARKETING IN INDIA

सत्यमेव जयते

Report on the

MARKETING OF CASHEW NUTS

IN

INDIA

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INTRODUCTION.

India is by far the most important producer of cashew nuts in the world. More than 90 per cent. of the international trade in cashew kernels emanates from this country. It is also the sole supplier of cashew shell oil. The production of cashew nuts is, however, confined at present to limited areas on the West and East Coasts of the country.

The trade in cashew nuts has developed only during the past 20 years or so and there are still great possibilities of increasing both the production and consumption of cashew nuts. The income from cashew plantations has considerably increased during recent years and every cashew tree now forms a source of subsidiary income to the cultivator. Besides being grown on a plantation basis, cashews can be successfully planted on waste lands and boundary lines of fields unsuitable for growing other crops.

This publication which presents in a concise form an account of the production and marketing of cashew nuts, cashew kernels and the various by-products of the cashew industry in India, points out a number of ways in which producers' returns can be increased. It also contains suggestions for improving the quality of the produce and methods of processing as well as for a better utilization of the various by-products of the industry.

Thanks and acknowledgments are due to a large number of cashew planters, processors, merchants and trade organisations and to the various Government departments for their friendly co-operation with the marketing staff in supplying useful information for this report.

NOTE.—The Government of India should not be regarded as assuming responsibility for all or any of the materials or recommendations contained in this report.

THE REPORT IS SHORT AND THE WHOLE OF IT WILL BEAR READING, BUT THOSE WHO WISH TO GET A QUICKER GRASP OF THE ESSENTIAL POINTS MIGHT FIRST READ THE SUMMARY AND CONCLUSIONS AND RECOMMENDATIONS GIVEN AT THE END OF THE REPORT (Pages 30 to 35).

CENTRAL AGRICULTURAL MARKETING DEPARTMENT

GOVERNMENT OF INDIA.

Delhi, March,......................1944.

CHAPTER I.—SUPPLY AND UTILIZATION.

A.—Introductory.

The cashew tree (*Anacardium occidentale*) is believed to be a native of South America and is now met with in many other tropical and sub-tropical parts of the world including India, Ceylon, Indo-China, Malay Peninsula, Philippine Islands, Brazil and Africa. It thrives under varying soil and climatic conditions. In India it grows on laterite soils on the West Coast with an annual rainfall of 120 to 150 inches and does equally well on the sandy soils of the East Coast having a rainfall of only about 35 inches. It is one of the hardiest of drought resisting plants, although it cannot withstand frost. Cashew trees flourish fairly well even on poor soils, and a large number of them grow wild.

Due to rapid increase in the demand for cashew kernels or *kaju* during the last 20 years, the cashew tree has attained great commercial importance. The kernels are extracted from the fruits of the tree which are commonly known as cashew nuts or seeds. The pericarp or shells of cashew nuts enclosing the kernels also yield an oil which, in recent years, has been found to be of great value in the preparations of varnishes, insulating coatings, moulding compositions, inks, etc. The tree is also prized for what are known as 'cashew apples'. These are simply the swollen peduncles on which the fruits are borne, although they are often wrongly termed as 'cashew fruits' (see plate facing this page). At present cashew apples are used mainly as vegetables or fruits. In certain parts of the world, their juice is also utilized for distilling purposes and for the preparation of vinegar.

B.—World production and trade.

As information on cashews is not included in the international statistics, no complete data regarding the production or trade in cashew nuts or kernels for the different countries of the world are available. From the information we have, it appears that the production of cashew nuts is of considerable commercial importance only in India, Africa and Brazil. In other countries, the various products of this tree are utilized mainly locally.

The United States of America and Canada are the biggest buyers of cashew kernels. The imports of cashew kernels in the United States have increased from about 50 tons in 1925 to 3,000 tons in 1930 and 18,000 tons in 1941. The consumption of cashew kernels is also steadily increasing in most of the European countries as well as in Australia, South Africa and several other parts of the world. More than 95 per cent. of the international demand for cashew kernels is estimated to be supplied by India alone. The small balance is made up mainly by Brazil. The trade from Africa is mostly in unprocessed nuts which are shipped to India for being processed and re-exported as kernels.

C.—Production of cashew nuts in India.

(1) GENERAL.

The cashew tree is said to have been introduced in India from Brazil by the Portuguese about 400 years back mainly for the purpose of checking soil erosion on coastal lands*. On the Malabar Coast, the cashew nut is known even to-day as *Paranji andi*, *i.e.*, Portuguese nut. The systematic cultivation of cashews on a plantation basis has been undertaken only in recent years with the development of the export trade in cashew kernels. The tree is also grown in gardens interspersed with mangoes, coconuts, arecanuts, etc. Previously, cashew trees used to be planted mainly for fuel purposes on waste lands and slopes of hills unsuitable for growing other crops and on boundary lines of fields as hedges.

(2) AREA AND YIELD.

(*a*) **Area and number of trees.**—The area estimates for cashews are not generally included in the crop statistics compiled by the Revenue departments. Bombay is perhaps the only province where the area under cashew trees is regularly recorded. The available statistics do not, however, give a correct idea of the actual position. For example, according to official statistics the area under cashews in this province varied from 2,654 acres in 1937-38 to 3,527 acres in 1938-39 and 3,345 acres in 1941-42. Such year to year fluctuations in area in the case of a perennial crop like cashews seem highly improbable.

In connection with the present survey, some area estimates for cashews were made by the revenue officials in several provinces and States at the instance of the local marketing staffs. The data collected have not, however, been found to be of much practical use in estimating production. For example, the area under cashews in Madras has been estimated at 45,000 acres with an outturn of 620,000 maunds of nuts, while the corresponding figures for the neighbouring States of Travancore and Cochin are 40,000 acres and 250,000 maunds and 8,300 acres and 200,000 maunds respectively. There is, thus, no correlation between area and production even in neighbouring areas. As cashew trees are generally scattered over a vast area of waste lands, it should indeed be difficult to form a fairly accurate estimate of the area covered by the crop without a comprehensive survey. To arrive at reasonably accurate estimates of production, information on acreage alone is not sufficient as the average number of trees per acre and the yields obtained per tree may differ considerably from tract to tract.

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* Paul's Cashew Nut Industry of South India—Tropical Agriculturist, Vol. 87.

The number of trees per acre have been estimated to range from 50 to 250 in different parts of the country. In the forests of the Mysore State where cashew plantations have been recently introduced, the number of trees varies from 75 to 175 per acre. 100 trees per acre is generally taken as the optimum number. In the earlier stages of a plantation, however, when the trees have not fully developed, even 150 to 200 trees may not be considered as an excessive number. As the plants develop, weak trees can be rooted out to provide the necessary space for others. In the case of plantations raised for fuel purposes, the number of trees may be as much as 1,000 to 1,500 per acre. Under such conditions the trees generally grow tall and there is not much of bushy growth.

(*b*) **Yield.**—The cashew tree generally begins to bear fruit at the age of 3 or 4 years, although in some cases trees have been found to fruit as early as 18 months after plantation. The yields are generally low up to the sixth or seventh year. The trees reach their full bearing capacity at the age of about 10 years. The best yields are usually obtained from 10th to 30th year after which they begin to decline. Generally, the trees begin to dry after 45. The various limits set forth above may, however, be considerably affected by cultural conditions and trees on rich soils with proper attention may reach their full bearing capacity even in sixth or seventh year.

Besides age and weather conditions, the yield also depends upon the type of the tree and its growth. Although experiments on the comparative yields from different types of cashew trees have been arranged on several agricultural farms, no conclusive data are available so far. The experience of producers is that the trees yielding big sized nuts are generally low yielders. The yield is also naturally low in the case of trees which have not fully developed. In close plantations, trees have been found to yield as low as 1 lb. each as against more than 100 lb. obtained in the case of a fully developed tree.

The best yields are generally obtained in a year of long and hot summer. Light showers are beneficial to the crop at the time of flowering, *i.e.*, in December—January. Prolonged cloudy weather at this stage has a damaging effect. A second flowering is in some cases induced by showers in March and April and thereby the yield is considerably increased.

The yield per tree is estimated to average in the different producing areas from about 20 lb. on the West Coast to 30 lb. in the eastern districts of South Arcot and Vizagapatam and about 40 lb. in parts of Orissa. The higher yields on the East Coast may be attributed partly to the fact that a large number of trees in that area grow wild and generally have all the space required for their full development.

(3) DISTRIBUTION OF PRODUCTION.

As reliable data regarding the area under cashews or number of trees per acre or average yields obtained per tree in different parts of the country are not available, the production estimates given in this report have been based mainly on the information collected from the industry. In doing so, due allowance has been made for the quantities retained for consumption in the producing areas. The production estimates for the important provinces and States worked out mainly on the data for the three years from 1938-39 to 1940-41, are shown in the following table. The position is also illustrated in the map facing this page. As will be observed, the production of cashew nuts is confined mainly to the coastal strips of the country.

Estimated production of cashew nuts in India.

——	Maunds.	Percentage to total production.
Madras	620,000	50·2
Travancore	250,000	20·3
Cochin	200,000	16·2
Bombay	120,000	9·7
Bengal	30,000	2·4
Orissa	14,000	1·1
Mysore	1,000	0·1
Total	1,235,000	100·0

(*a*) **Madras.**—Madras is by far the most important province as far as cashew nut production is concerned. In this province cashew nut production is concentrated mainly in the two districts of South Kanara and Malabar on the West Coast with Mangalore as the chief processing centre. These two districts together account for 370,000 maunds or 60 per cent. of the total provincial production. The other important districts are Vizagapatam on the East Coast with a crop of 65,000 maunds, South Arcot with 50,000 maunds, Trichinopoly and Tanjore with 40,000 maunds each and East Godavari with about 30,000 maunds. Cashew trees are also found scattered in several other districts of the province including Chingleput and Guntur but the total production in those areas is not estimated to exceed 25,000 maunds in all.

(*b*) **Travancore.**—Cashew nuts are produced in practically all parts of the Travancore State. The talukas of Chirainkil, Kottarakara and Kunnathunad are comparatively more important and cover about 60 per cent. of the local production. Quilon, an important port town of this State, is by far the most important centre for the collection and processing of cashew nuts in India and the factories in that area usually handle more than 75 per cent. of the Indian export trade in kernels.

(*c*) **Cochin.**—The Cochin State ranks first as far as the concentration of production is concerned. It contributes about 16·2 per cent. to the country's total cashew nut production. As the processing industry has not so far developed in this State, the local crop is treated mostly in the factories at Quilon and to some extent at Mangalore.

(*d*) **Bombay.**—In the Bombay Province the production of cashew nuts is confined mainly to the coastal districts of Ratnagiri and North Kanara. These two districts contribute about 48 per cent. and 18 per cent. respectively of the local outturn. The *taluks* of Vengurla and Malvan in Ratnagiri are the main areas of concentrated production and cover nearly 45 per cent. of the local crop. The headquarters of these two *taluks*, *viz.*, Vengurla and Malvan, are also important processing centres. Sawantwadi State situated on the east of Vengurla *taluk* is also an important area for cashew nuts and of the total production of 120,000 maunds for the Bombay area, nearly one-third is drawn from this State.

(*e*) **Other areas.**—A very large proportion of the production of cashew nuts in Bengal is obtained from the Contai Sub-division of the Midnapur district. Cashew trees are grown there on sandy ridges within 3 or 4 miles of the sea-coast. In Orissa, the districts of Puri, Ganjam, and Ballasore are the chief producing areas.

In recent years cashew nuts have also been introduced in the forest areas of the Mysore State. In all about 500 acres have been put under this tree so far. The production of nuts from these new plantations is, however, comparatively negligible. About 1,000 maunds of nuts are produced from about 11,000 trees in the Kolar district of the State.

(*f*) **Total production.**—As shown in the preceding table, the total production of cashew nuts in the British provinces and Indian States during the period 1938-39 to 1940-41 averaged 1,235,000 maunds or 45,400 tons. Due to cyclone damage on a part of the West Coast the production for 1941-42 is estimated at a slightly lower figure and may be taken to be about 44,000 tons. Of the total production, more than 70 per cent. is drawn from the areas on the West Coast, including the districts of Ratnagiri and North Kanara in Bombay, South Kanara and Malabar in Madras and the States of Cochin and Travancore.

Approximately 135,000 maunds of nuts or 5,000 tons are also estimated to be produced in Goa, a Portuguese territory situated between the districts of Ratnagiri and North Kanara in Bombay. Although this Portuguese possession is situated very near to the cashew nut factories at Vengurla and Malvan in the Ratnagiri district, there is practically no trade in nuts or kernels between the two areas.

(4) QUANTITIES RETAINED BY PRODUCERS AND MARKETABLE SURPLUS.

Of the total production, only about 30,000 to 35,000 maunds or 2½ per cent. are estimated to be retained by growers for their own consumption. About 20 years back, however, when the prices of cashew nuts were generally low, a much larger proportion of the local produce used to be consumed by growers and others in rural areas.

The proportion of the local produce kept back by growers for consumption is estimated to vary in different tracts from 1 per cent. to 15 per cent. In the Travancore and Cochin States where cashew nut production is concentrated in comparatively small areas, only about 1 per cent. of the produce is estimated to be so retained. The corresponding figures for Bombay and Madras are 2 to 3 per cent. and 4 to 5 per cent. respectively. In Orissa and Mysore, about 15 per cent. of the crop is retained by the growers for their own use. In these areas, the quantity produced per grower is very small.

After allowing for the quantities retained by growers for their use about 1,200,000 maunds of cashew nuts produced in India are annually put on the market through different agencies.

(5) SEASON OF PICKING AND MARKETING.

The cashew crop in India is collected between February and May. The trees begin to flower in December and it generally takes about 2 to 3 months for the nuts to get matured. In years when there is a good shower in March-April, some trees flush again and yield a second crop which is ready by the end of May.

The cultivators are generally anxious to move the crop to the market as soon as they can and it is not rare to find them picking nuts which are not even fully matured. In a number of cases, this is forced by other circumstances also, such as pilfering by passers-by. As cashew trees are generally scattered over a wide area it is difficult to have a proper watch over every stray tree. A rough idea of the proportions of the crop collected in different months can be had from the following estimates arrived at by the marketing staff in Madras and Bombay.

Percentage of production of cashew nuts collected in different months.

——	Madras.	Bombay.
February	10	10
March	37	40
April	36	30
May	17	20

After collection, producers do not generally keep the nuts for more than a week for drying and quite often partially dried nuts are taken to the market (see page 9).

(6) TREND OF PRODUCTION.

The marketable supply of cashew nuts is estimated to have increased about tenfold during the last 15 years. In 1925, the total quantity put on the market was estimated to be about 120,000 maunds only as compared with 1,200,000 maunds for the recent 3 years. The increase in production has not been due solely to the planting up of new areas with this crop. It is largely accounted for by improvements in the methods of collection of nuts. Previously when the prices of nuts were low and hardly covered the cost of collection, the producers were not keen on watching every stray tree and the nuts from a large number of trees were never collected. Now, every tree is looked upon as a potential source of income by the cultivator.

With a rapid increase in the export demand and the consequent rise in prices, the returns from cashew trees have considerably increased. Consequently in recent years a large area has been planted with this crop in the different parts of the country. The average net income from a cashew plantation is estimated (when nuts are selling at Rs. 4-8 per maund) at Rs. 85 per acre as compared with Rs. 30 to Rs. 40 from coconut plantations. On the other hand, the requirements of a coconut plantation both as regards soil fertility and water supply are far more exacting than those of cashews. As a large number of new plantations have not reached their full bearing capacity, it is estimated that the production of cashew nuts will go on increasing at the rate of at least 5 per cent. every year for the coming 10 years even if no new plantations are put in.

D.—Imports of cashew nuts.

Although the local production of cashew nuts is more than sufficient to meet the requirements of the home market, it falls much short of the export demand for kernels. Large quantities of cashew nuts are, therefore, imported every year practically all from Africa—to be processed and re-exported (see Appendix I). The actual extent of imports in a year depends upon the condition of the local crop and the export demand for kernels.

In the customs returns separate statistics for cashew nuts are being recorded only from 1937-38 and detailed data prior to that year are not available. The information collected from the industry shows that India has been importing cashew nuts from Africa since the very inception of the export trade in kernels. The imports have, however, considerably increased during recent years. The total imports which amounted to only about 42,000 maunds in 1925 increased to about 178,000 maunds in 1930. During the recent five years (1937-38 to 1941-42) they have ranged, as shown in the following table, between 572,000 and 883,000 maunds.

Imports of cashew nuts into British India and Indian States.

(In thousand maunds.)

Country.	1937-38.	1938-39.	1939-40.	1940-41.	1941-42.
Portuguese East Africa	7,81	8,37	5,17	8,40	7,48
Union of South Africa . . .	82	..	31	1	..
Kenya Colony	16	5	9	12	2
Other African territories . . .	3	5	3	9	8
Other countries	1	*nil.*	12	*nil.*	*nil.*
Total .	8,83	8,47	5,72	8,62	7,58
Calculated value per maund in rupees, annas and pies.	4-8-4	4-8-8	5-0-8	5-13-7	7-9-11

The imports in 1939-40 were comparatively less due mainly to shipping difficulties which were experienced in the early stages of the present war before arrangements could be made for convoys, etc. Due to the same reason there was a fall in the export of kernels also this year. The fall in imports of nuts during 1941-42 can, to a certain extent, be attributed to the high price of imported nuts and high freight and insurance charges. The freight rates from the East African ports to Bombay are now (August 1942) quoted at 70 shillings per ton of 20 cwt. as compared with 27½ shillings before the war. The rise in insurance rates has also been very high—the current quotations being £ 2 or Rs. 26-10-8 per ton as against 10 annas before the war.

Of the total imports during the period from 1937-38 to 1939-40 for which detailed statistics are available, about 56 per cent. was on an average, consigned to ports in Travancore 35 per cent. to ports in the Madras Province, and the balance to the Bombay ports (see Appendix I). In the case of Madras ports, practically the entire quantity is shipped to Cochin and of that a very large proportion is ultimately diverted to Quilon. Small quantities of nuts are sometimes imported at Coconada on the East Coast for supplying the requirements of the factories in the Mori (East Godavari) and Vetapalem (Guntur) areas. More than 95 per cent. of the imported nuts are treated in the factories on the West Coast. The factories in the Quilon area alone are estimated to consume about 75 per cent. of the quantity. A large part of the balance is processed at Mangalore. The imports of cashew nuts are distributed more or less evenly throughout the year as is shown by the data in Appendix II, which gives the monthly imports of cashew nuts in British India for the period from 1937 38 to 1941-42. As will be noted, there are no definite periods of high or low imports except that the quantities received in October are generally very small, it being the end of the season. The cashew nut season in the different parts of Africa extends from November to March.

The African nuts are of slightly inferior quality as compared with the Indian produce. They are small in size and the percentage of high grade kernels obtained from them is relatively less. The kernels in African nuts are, however fully developed and the recovery of kernels on nuts averages about 26 per cent. as against 25 per cent. in the case of Indian nuts. As already noted, in several parts of India cashew nuts are picked when not fully mature.

No customs duty is levied on the imports of raw cashew nuts in India. An import duty of 36 per cent. *ad valorem* is payable on unskinned kernels, but there are no imports of unskinned or skinned kernels into this country.

E.—Total supply of cashew nuts and production of kernels.

The total annual supply of cashew nuts in India during the triennium ending 1940-41 averaged approximately 1,996,000 maunds or 73,000 tons including 761,000 maunds or 28,000 tons of imports. Practically the entire quantity is shelled and peeled as kernels and used for human consumption. The quantity of nuts used for seed purposes is very negligible.

Although a considerable quantity of cashew kernels is put on the market in India for local consumption in an unpeeled form, they are ultimately consumed only after peeling. The quantities of kernels referred to in this report are, therefore, all in terms of peeled kernels. As will be shown in Chapter II on Processing and Grading, the recovery of peeled or balanced kernels from nuts varies from 23 to 28 per cent. and averages about 25 per cent. in the case of Indian nuts and 26 per cent. for African nuts. On this basis, the total supply of kernels for the triennium ending 1940-41 works out to 508,000 maunds or 18,700 tons per annum. Taking the average price of kernels at Rs. 35 per maund, the total value of the kernels processed in India amounts to one crore and 78 lakhs of rupees.

F.—Export of cashew kernels.

(1) GENERAL.

As in the case of many other fresh and dried fruits liable to rapid deterioration, the development of the trade in cashew kernels has been made possible chiefly by improvements in the methods of packing and transportation. Cashew kernels shipped from India are now packed in vacuum which ensures a safe delivery in distant countries irrespective of season or climate. About 20 years back cashew kernels were no better known outside their areas of production than many tropical fruits like the mango. The rapidity with which the trade in cashew kernels has developed provides a certain index of the high popularity which this product has gained in countries like the United States of America and the United Kingdom.

The first attempt to develop the export trade in kernels were made by a manufacturing concern in 1921. By 1930, a definite demand for cashew kernels was established in America. Since then there has been a steady increase in the demand for this product and the total exports which are estimated to have amounted to only 25,000 maunds in 1930 totalled 498,000 maunds or 18,000 tons in 1941.

(2) QUANTITIES, QUALITIES AND DESTINATIONS.

Appendix III shows the quantities and values of cashew kernels exported from India to different countries during the period from 1937-38 to 1941-42. During the triennium ending 1940-41, the total exports averaged 387,000 maunds covering about 76 per cent. of the total supply of kernels. The position for recent years is summarised below :—

Exports of cashew kernels from India.

(In thousand maunds.)

Country.	1937-38.	1938-39.	1939-40.	1940-41.	1941-42.
United States of America . .	3,17	3,22	2,84	3,45	4,25
United Kingdom	17	21	33	38	71
Canada	8	11	15	13	28
Other countries	32	38	27	14	18
Total .	3,74	3,92	3,59	4,10	5,42

In spite of shipping difficulties due to war conditions, the trend of export has been distinctly upward, except for the slight decline in 1939-40.

More than 80 per cent. of the total exports are, on an average (1937-38 to 1939-40), sent to the United States of America. The demand from the United Kingdom, Canada, Australia, New Zealand and several other countries, although small at present, is steadily increasing. Many of the European countries including France, Netherlands and Belgium also used to be good buyers of cashew kernels, before the outbreak of the present war.

As large sea-going vessels do not generally call at Quilon, Mangalore, and Calicut, the chief processing centres, 85 to 90 per cent. of the total exports are shipped from the port of Cochin. The produce from the factory areas is transported to this port in country crafts or small steamers.

The kernels exported to various countries are usually graded according to certain commonly recognised standards popularly known as American grades. The demand from America as well as from most of the other countries is usually for bold and whole kernels which are preferred for table use and retail sale. In the United States of America, cashew kernels are generally sold in small packets after being fried and salted by small distributing concerns. A large quantity of brokens is also exported to various countries for use in confectionery.

According to the recent (June 1942) orders of the Government in the United States of America, only such cashew kernels can be exported to that country from the shells of which the necessary oil has been extracted. The step has been taken to ensure a sufficient and regular supply of this oil which has been found very useful in certain war industries in that country. In order to be able to pay for oil at the increased rate of $ 475 per ton f. o. b. the American Government have levied on cashew kernels an additional import duty of 7 cents per lb., the original rate of duty having been 2 cents per lb.

No customs duty is levied on exports of kernels from this country. There is, however, an agricultural cess of ½ per cent. *ad valorem* on all exports and the proceeds of this cess are earmarked for financing the activities of the Imperial Council of Agricultural Research, India.

(3) PERIODICITY.

Appendix II shows the monthly exports of kernels from British India and Indian States during the period 1937-38 to 1941-42. Although shipments are spread all over the year, the quantities exported in the 5 months from July to November are comparatively high and cover, on an average, about 54 per cent. of the annual total. September-October are the months of maximum shipments which are possibly due to the increased demand for cashew kernels in the western countries during the Christmas season.

G.—Net available supplies and utilization.

(1) GENERAL.

On the basis of statistics for the triennium ending 1940-41 the quantity of cashew kernels available for consumption in India is about 121,000 maunds per annum. This is equal to about 24 per cent. of the total supply of kernels processed in India.

Cashew kernels are a very nutritive and concentrated food and have also a nice taste and an attractive flavour and appearance. They contain a high percentage of proteins and fats and are rich in phosphorus, iron and vitamin A. Vitamins B_1 and B_2 are also present to a small extent in cashew kernels. An idea regarding the dietetic values of cashew kernels as well as those of other nuts commonly consumed in this country can be had from the analytical results given in Appendix IV. Although the kernels from practically all the different kinds of nuts included therein are highly nutritive, all of them do not have the attractive taste and flavour which cashew kernels or almonds possess. Due to their high fat content cashew kernels have a heating effect on the system and the quantities consumed during the winter months particularly in Northern India, are comparatively large.

(2) UTILIZATION FOR VARIOUS PURPOSES.

(*a*) **General.**—Cashew kernels are used in India for a variety of purposes. Due to their comparatively high price, their consumption is confined mostly to well-to-do classes and to urban areas, excepting the producing tracts.

(*b*) **Utilization in producing areas.**—In the producing tracts green cashew kernels are used in the preparation of *curries*. A considerable quantity of roasted kernels is also used as such and for flavouring sweet dishes. For direct consumption slightly over-roasted kernels are generally preferred. The consumption in producing areas is, however, mostly confined to the harvest months.

(*c*) **Utilization outside producing areas.**—In the urban areas of Southern India, a very large proportion of the available supply of kernels is used at home for flavouring sweet dishes, particularly on festive occasions. Large quantities of kernels are also used in restaurants and sweetmeat shops for the same purpose and for decorating confectionery. The quantities of kernels consumed as such or after being fried and salted are rather small at present, but the demand is steadily increasing. A small quantity of kernels is also used after being coated with sugar or mixed with fried and salted beaten rice (*chura*) or gram. Cashew kernels are also occasionally used in the preparation of biscuits, cakes, etc.

While for frying and eating as such bold and whole kernels are in demand, for flavouring various dishes and confectionery, the demand is usually for broken pieces which are available at comparatively low prices. Excepting the festive occasions such as the *Dewali*, *Shankarant*, *Id* and Christmas, when comparatively large quantities are used, consumption is spread, more or less, uniformly all over the year.

In Northern India, cashew kernels are mostly used as such or after mixing with other dried fruits including walnuts, slices of coconuts, raisins, etc. In recent years the use of fried and salted kernels has also spread to a considerable extent. A good deal of it is due to the distribution of salted kernels by the Coffee Houses, recently opened in the different parts of the country and the supply of cashew kernels in 1 lb. hermetically sealed tins by Messrs. Stanes & Co. of Coimbatore.

Unlike most parts of Southern India, the consumption of cashew kernels in Northern India is mainly confined to winter months. As cashew kernels are believed to have a heating effect on the system, they are rarely consumed in the hot season (see Appendix V).

(*d*) **Trend of demand.**—No reliable data regarding the production or the inter-provincial movements of cashew nuts or cashew kernels from which the trend of demand in India as a whole or in different provinces or States could be ascertained. The unanimous view of the trade, however, is that there has been a steady increase in the demand in the home market and the consumption has gone up by at least 200 per cent. during the past 10 years. Salted kernels in particular have become very popular.

(3) PER CAPITA CONSUMPTION.

The following table shows the quantity of cashew kernels consumed in the several provinces and States of India. As outside the producing tracts, cashew kernels are used mostly in urban areas only, *per capita* consumption has been calculated both on the basis of total population and urban population.

Per capita *consumption of cashew kernels.*

—	Estimated consumption of cashew kernels (in maunds).	*Per capita* consumption.	
		On total population (tolas).	On urban population (tolas).
Sind	3,500	2·5	13·2
Punjab *	4,500	0·3	2·5
United Provinces	5,000	0·3	2·3
Bihar	1,000	0·1	2·1
Bengal	19,000	1·0	13·3
Orissa	1,300	0·3	3·5
Central Provinces	3,500	0·7	5·6
Bombay	21,000	3·2	11·8
Madras	47,500	3·0	9·2
Travancore and Cochin	6,000	3·0	21·0
Mysore	2,000	0·9	5·4
Hyderabad	1,000	0·2	1·7
Delhi	1,500	5·2	9·2
Others	4,200	0·19	1·9
Total	121,000	1·0	8·9

* Including N.-W. F. P. and Kashmir.

In the main producing provinces of Madras and Bombay and the States of Travancore and Cochin, the annual consumption of cashew kernels on the basis of their total population works out to nearly 3 *tolas* per head. In the case of Bengal and Mysore the corresponding figure is one *tola*. The annual consumption in the case of most of the other tracts ranges from 1/5th to 1/3rd of a *tola*, while it is only 1/10th of a *tola* in the case of Bihar. The high figure in the case of Sind can to some extent be attributed to the fact that the quantities consumed in the urban areas of this province are comparatively large.

On the basis of urban population, the highest figure of *per capita* consumption occurs in the chief producing areas of Travancore and Cochin. The consumption in the maritime provinces of Bombay, Bengal, Madras and Sind is also comparatively high. This is perhaps partly due to the fact that in the port towns of these provinces, where the standard of living of the people is generally high a comparatively much larger quantity of kernels is consumed than in other parts.

As should be expected, the *per capita* consumption in the case of Delhi which accommodates a large number of well-to-do people from the different parts of the country is also high and is nearly four times than in the adjoining tracts of the United Provinces and the Punjab. The *per capita* consumption in the urban areas of most of the other provinces and States is low and ranges from 2·1 *tolas* in the case of Bihar to 5·6 *tolas* in the case of the Central Provinces.

(4) INTER-PROVINCIAL DEMAND.

The production of cashew kernels is confined mainly to the coastal districts of Southern India. The direction of movements from these areas to the consuming markets in the different parts of the country is shown on the map facing page 3.

The produce of the East Coast which amounts to about 65,000 maunds is more or less entirely consumed within the country. This is distributed mainly from the factory centres at Palasa, Mori, Vetapalem and Tanjore. The provinces of Orissa, Bengal, Assam, Bihar and parts of the United Provinces and the Central Provinces get their supplies mainly from these centres.

In the case of the West Coast, only about 56,000 maunds or 13 per cent. of the total production is utilised for inland consumption and the balance is exported. Bombay is the chief distributing centre for the produce of this coast. Cashew kernels produced in the Ratnagiri district are also supplied to markets in Hyderabad and parts of Mysore *via* Belgaum. The markets in Sind, Punjab, Rajputana, Central India and the eastern parts of the Central Provinces and the United Provinces get their supplies mostly from Bombay.

CHAPTER II.—PROCESSING, GRADING AND PACKING.

A.—Collection of cashew nuts.

(1) PICKING.

Cashew nuts are ready for harvesting when the fleshy portion of the peduncle (commonly known as "cashew apple" or "cashew fruit") to which they are attached becomes ripe. Often ripe apples with the attached nuts drop down to the ground of their own accord. The operation is sometimes expedited by shaking the bearing branches. In most cases, however, producers pick up the fruits from the trees before they are fully ripe.

In the case of cashew trees, flowering usually extends to about 3 months and so also the harvesting season which commences towards the end of February and continues right up to the end of May or early June. The nuts are gathered as they get ripe or semi-ripe. For picking nuts from the trees, long bamboo poles with hooks attached to their tip ends are used. It is a laborious and patient operation necessitating the hooking and pulling down of fruits one by one. In doing so, care has to be taken that flowering branches or unripe fruits are not injured. Coolies, however, often gather a lot of unripe or semi-ripe fruits.

The picking of immature nuts adversely affects both the quantity and quality of the produce. The kernels from such nuts are light and are not fully developed and, therefore, sell at a discount. As, however, the premium given in the trade for ripe nuts is generally small, the ultimate loss incurred by picking immature nuts is not fully appreciated. In the general interest of the industry, it is very desirable that nuts be harvested only when they are fully developed.

In the case of small producers, harvesting is generally done with the help of members of their families. In large plantations, hired labour has to be employed for the purpose. Quite often the standing crop is sold out to contractors who make their own arrangements for the collection of nuts. The cost of harvesting varies from tract to tract, ranging between Rs. 2-8-0 and Rs. 5 per acre—roughly equal to 1½ to 3 annas per maund of nuts collected.

(2) PREPARATION OF NUTS FOR THE MARKET.

Cashew nuts are first separated from the swollen peduncles or "cashew apples". They are then dried in the sun for a day or so. In some cases, unripe nuts are separated from the rest before the produce is put on the market. On the other hand, with a view to passing the unripe nuts as ripe ones some producers scald the former with boiling water and sell them mixed with ripe ones.

Generally the cashew nuts put on the market are only partially dry and they have to be dried again by merchants or factory agents before they are fit for undertaking journey to factory centres. Undried nuts do not keep well for more than a few days and the colour of their kernels becomes yellowish. Sometimes cultivators, instead of drying the nuts completely, make them more moist by adding water while taking them to the market. The main reason for doing so is to get a larger price on the basis of weight.

On the farms drying operations are usually carried on with the help of members of the family and as such no money costs are incurred. In the markets, however, hired labour has to be employed for the purpose and a three days' drying which is generally necessary to make the nuts reasonably dry, costs about 1½ annas per bag of 2 maunds each. Almost an equal amount has to be spent on cartage to drying yards. The loss in weight during drying including the shortage caused by the removal of bad and damaged nuts, generally ranges from 5 to 12 per cent. As all the costs have ultimately to be borne by producers, considerable economy can be effected by drying the nuts completely before they are put on the market. By doing so, a further saving of 5 to 10 per cent. would accrue in the costs of transportation from the farms to the assembling markets.

B.—Processing of cashew nuts.

(1) GENERAL.

To obtain the blanched cashew kernels of commerce, cashew nuts have to be roasted and shelled, and the kernels peeled of their outer skin or test. In certain tracts, *e.g.* in Panruti, Nellore and Kasargod areas in Madras, the nuts, instead of being roasted are simply dried in the sun before they are shelled. Roasting makes the shells brittle and thus facilitates the extraction of kernels. It also imparts a special flavour to the kernels. The kernels obtained from roasted nuts are generally preferred for eating, while the kernels from raw nuts enjoy a special demand from a section of orthodox Hindus, who have religious objections against the use of cooked or roasted articles of food. The latter type of kernels are also preferred in certain tracts for frying purposes. The quantity of kernels obtained from unroasted nuts does not, however, exceed 5 per cent. of the total production.

A considerable quantity of unpeeled kernels is also put on the market. These are peeled at the time of consumption. Unpeeled kernels are cheaper and keep better than peeled ones. The export trade which covers more than 75 per cent. of the total production is, however, entirely in peeled kernels. To prevent deterioration in quality, these are generally packed in vacuum.

(2) ROASTING.

(*a*) **General.**—The methods of roasting cashew nuts have undergone considerable change during the past 12 years or so. Until recently, attempts were mainly concentrated on evolving a process by which nut could be uniformly roasted at a minimum cost and in such a way that the shell oil* or the pungent smoke from the burning nuts did not affect the health of the workers. Since the oil contained in cashew nut shells has been found to be of great value in certain essential industries the latest methods of roasting aim at extracting the maximum amount of oil without, at the same time, affecting the quality of kernels.

Roasting is both a delicate and a difficult process. To obtain kernels of good quality, the nuts have to be uniformly roasted and to the desired degree, as a slight under or over roasting affects adversely both the quality and recovery of whole kernels. With a view to ensure even roasting, nuts are generally sorted out according to their sizes. They are also sometimes slightly moistened to avoid charring. The various methods of roasting followed at present are described below.

(*b*) **Open Pans.**—The system of roasting cashew nuts in shallow open pans over earthen ovens is in vogue in all the producing areas of the country (see plates facing this page). Until recently, this was the principal method of treating nuts on a commercial scale. The shells of previously treated nuts are used as fuel. Two to three pounds of nuts are treated at a time. Due to heating, the oil in shells exudes out and the nuts catch fire. To ensure uniform roasting, the nuts are constantly stirred. The operation takes about a minute or so to be complete. When the charge has been roasted to the desired degree, the pan is lifted by hand and the burning contents tilted over the ground. The flames are extinguished by splashing a little water over the nuts. They are further rubbed with a little sand or ash to prevent smouldering and also for absorbing the shell oil which otherwise injures the hands and fingers of the workers while shelling.

Generally one man and one woman work on an oven and treat about 15 maunds of nuts a day. The wages paid for roasting varies from tract to tract, ranging from 2½ to 4 annas per bag of 2 maunds, with an average of about 3 annas per bag.

Although the system of roasting in open pans does not require any initial outlay beyond a few rupees, it suffers from two main defects. The oil in the shell is completely lost. Secondly, due to the action of shell oil, the hands of the workers are badly injured. Further the pungent smoke from the burning nuts has rather a discomforting effect on the workers. Ovens are, however, made in the open and their mouths are so arranged that the smoke may pass away quickly.

(*c*) **Earthen wares.**—In several tracts, *e.g.*, in the Ratnagiri area of Bombay and parts of Orissa, earthen vessels are used for roasting small quantities of cashew nuts. Vessels with wide mouths and perforated bottoms are preferred for the purpose. About 1 to 2 lb., of nuts are treated at one time and the charge takes nearly 10 minutes to be ready. The process of roasting is similar to that followed in the case of open pans except that a part of the shell oil tickles down through the holes at the base and is collected in iron receptacles. The work is generally done by women. On the whole, the method is slow and suffers from practically all the defects of the open pan system.

(*d*) **Rotary cylinders.**—In preference to open pans, a number of large processing concerns have adopted the use of rotary cylinders for roasting cashew nuts. The device was first introduced in 1931 by Messrs. Peirce, Leslie and Co., Ltd., of Mangalore. The cylinders used are generally about 12 feet long and 3 feet in diameter and made of perforated galvanised iron sheets. They are suspended in an inclined position over big furnaces fitted with chimneys. The nuts which are fed at the upper end of a cylinder, slide down gradually as it revolves and by the time they reach the lower end, they are completely roasted. The whole process takes 1 to 2 minutes depending upon the intensity of the fire according to which the rotations of the cylinders are adjusted. The shell oil which oozes out during the process, escapes through the small perforations and is drained out into suitable receptacles. The burning nuts at the lower end are treated with a spray of water and are then removed for cooling and subsequent handling.

A rotary cylinder used to cost about Rs. 200 before the war (1939). About 50 maunds of nuts are roasted in each cylinder during a day. Each cylinder is operated by six men, two for feeding the nuts, one for rotating the cylinder, one for spraying water, one for removing the roasted nuts and the sixth one for attending to the furnace. Each labourer is paid about 8 annas per day. Shells of previously treated nuts are used as fuel. The total cost of roasting averages about 1 anna per maund, *i.e.*, nearly two-thirds of that in the case of open pans. Although this system is quite efficient and hygienic as far as roasting is concerned, a large proportion of the shell oil is lost in the process.

(*e*) **Oil baths.**—A new machine combining the advantage of extracting a very large proportion of the oil present in the shells with good roasting, was patented by Messrs. Peirce, Leslie and Co., Ltd., in 1936. This consists mainly of a large bath (filled with cashew nut shell oil) through which nuts, kept in wire trays, are passed. The temperature of the bath is maintained at about 200° C. Nuts remain in the bath for about a minute. Due to the high temperature of the bath, the oil cells of the nuts burst releasing their contents. At the same time the shells get roasted to the desired degree. One machine is able to treat about 300 to 350 maunds of nuts in a day of 24 hours. Several of these machines are in operation in the factories of the inventors. The cost of a complete equipment was estimated in 1939 at about 7,000 rupees.

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*Due to the presence of an astringent substance, known as 'cardol' the oil from cashew nut shells, like carbolic acid, has a blistering action on the human body.

Recently a similar machine has also been patented by another firm and several other concerns are now trying to use the device. The importance of this method has considerably increased since last year (1942) when the Government in the United States of America declared that only such kernels could be exported to their country from the shells of which the necessary oil had been extracted (see page 6).

Although the roasting of cashewnuts in rotary cylinders and oil baths is more economical and hygienic than in open pans, practically all the factories working on the East Coast and in up-country centres use open pans. The factories on the West Coast, however, usually work with rotary cylinders while two of them, as already indicated, use oil baths.

(3) SHELLING.

The work of shelling cashew nuts and the extraction of kernels therefrom is almost invariably done by women and children. As shelling is comparatively easier when the nuts are brittle, this operation is generally undertaken soon after roasting. In the case of unroasted nuts, shelling is done after the nuts have been thoroughly dried in the sun.

For shelling, nuts are placed one by one on a level stone and are cracked by giving a few sharp blows with slight wooden mallets (see upper plate facing this page). The kernels are then extracted with or without the help of a wire prong. Great care is taken that the kernels do not break, as broken kernels sell at a considerable discount. Certain progressive concerns provide their labour with wooden mallets fitted with steel ferrules which are helpfull in striking the nuts pointedly on the exact line of cleavage. Shelling is a delicate process and can be performed successfully only by trained hands. The workers generally smear their fingers over and over again with ash in order to avoid the injurious effects of the shell oil.

Attempts to introduce mechanical crackers for shelling cashew nuts have not been very successful*. A cracker has, however, been introduced recently by the Vita-Pack Corporation of America for this purpose. The machine is being tried at present in certain factories at Vengurla and Malvan in the Bombay Presidency.

One woman is generally able to shell by hand 30 to 35 lb. of nuts per day. The wages are paid on the basis of weight of the whole kernels recovered. Nothing is paid for brokens with the result that the workers themselves are careful to avoid breakage. The charges for shelling are generally 4 pies per lb., although they are found to range in different areas from 3 to 6 pies per lb.

The recovery of unpeeled kernels on the weight of nuts generally varies from 28 to 30 per cent. including 3 to 5 per cent. of brokens. Although the recovery of kernels in the case of African nuts is on an average about 1 per cent. higher compared with the Indian nuts, the proportion of broken is more in the former case and ranges from 8 to 12 per cent.

(4) PEELING AND SWEATING.

The kernels as extracted from the shells are covered with a brownish thin skin. This has to be removed before the kernels are fit for human consumption or for export, as there is practically no demand for unpeeled kernels in the foreign countries. To facilitate peeling, kernels are generally dried either in the sun or, as is generally the case in large factories, in specially constructed hot air chambers. In these chambers, kernels are heated, spread over flat tin trays for 4 to 8 hours at a temperature of about 70° C. By heating, the outer skin gets shrivelled and can be peeled off easily and completely by hand—leaving an ivory-white attractive surface which is so much valued in the trade.

Like shelling, peeling is done by women and children (see lower plate facing this page). In the case of small factories, the peeling is generally done at home, while in large processing concerns, the work is carried out on the factory premises. One woman is generally able to peel about 10 lb. of kernels per day. The wages are paid on the weight of kernels peeled. The charges for whole kernels vary in different tracts from 3 to 6 pies per lb.—4 pies being the most common rate. In order that the workers may be careful and there may be a minimum of breakage, the kernels which break during the process are paid for at only half the rates for whole kernels. It is, however, a more difficult task to peel brokens than wholes. The peeling of broken kernels actually costs about 6 pies per lb.

The recovery of peeled kernels on the basis of un-peeled ones, averages about 88 per cent. About 20 to 25 per cent. of the kernels generally break in the process. The breakage is comparatively more in the case of African nuts and may amount to as much as 35 to 40 per cent.

The kernels as received after peeling are in a dry and brittle condition and liable to considerable breakage during the subsequent operations of grading and packing. They are, therefore, allowed to absorb some moisture by being kept in what are known as " Sweating Chambers " for 2 to 3 hours. This process is not considered necessary in the case of sun-dried nuts.

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* " The mechanical methods available for the decortication of various types of commercial oil seeds such as groundnuts and palm kernels have not proved adaptable to the treatment of any variety of valuable dessert nuts. Due to variations in size and shape and the presence of fluid in the shell of the cashew seed the difficulties of mechanical treatment are much greater than in the case of such nuts as almonds, walnuts, pecans or Brazil nut."—Peirce, Leslie and Co., Ltd.

(5) TOTAL COSTS OF PROCESSING.

The total costs of processing generally average about Rs. 4-2-0 per maund of peeled kernels as detailed below :—

	Rs.	a.	p.	
Roasting	0	6	0	for 4 maunds of nuts.
Shelling	1	12	0	for 1 1/8 maunds of kernels including brokens.
Peeling	1	13	0	for 1 maund of peeled kernels including brokens.
Miscellaneous expenditure . .	0	3	0	for heating, sweating, etc.
Total .	4	2	0	

(6) LOCATION AND CAPACITY OF PROCESSING CONCERNS.

Appendix VI gives a list of important concerns engaged in processing cashew nuts in different parts of India, together with their approximate annual turnover. It may be noted that, unlike other industries, the outturn of a cashew nut factory can be considerably increased or decreased as need arises. The initial capital investment in the case of a cashew factory is very small. Some of the processing concerns do not even have permanent premises. The roasting is done in open fields and temporary sheds may be put up for shelling and peeling, while in certain cases, these operations may be carried under the shade of trees. The large concerns on the West Coast have, however, erected spacious buildings and sheds for the purpose (see plates facing this page and page 13). Due to the pungent and obnoxious smell given out in roasting, cashew nut factories are not allowed to work within municipal limits.

Excepting for a few large concerns operating at Mangalore, Calicut and in the Quilon area, the quantities of nuts treated by an average factory come to about 10,000 maunds in a year. The turnover of a number of factories on the East Coast is, however, still less and varies from 1,000 maunds to 4,000 maunds as these factories work only on the local crop for 4 to 5 months in a year. The working season of most of the factories on the West Coast which cater for export demand, extends from December to August-September. From December to March, they process mainly imported nuts and from April onwards, the local crop.

A factory processing about 10,000 maunds of nuts in a year employs about 200 workers a day. More than 90 per cent. of these are women and children—many of them below 12 years. As cashew nut factories (excepting a few working on the oil bath system) do not employ power, they are not governed by the provisions of the Indian Factories Act which prohibit the employment of children below a certain age and for long periods.

C.—Grading.

(1) CASHEW NUTS.

While there is an elaborate system of grading in vogue in the case of cashew kernels, cashew nuts are not graded at present at any stage of their marketing. Generally the produce is put on the market in a mixed state containing nuts of varying sizes and quality including undeveloped and damaged nuts.

The main factors taken into account in adjudging the quality of cashew nuts are (1) size, (2) maturity and [illegible]) moisture. Bold dry nuts with fully developed kernels are preferred. Undeveloped shrivelled and damaged nuts are at a discount.

As a very large proportion of the cashew crop is put on the market in a mixed form, the prices paid are generally not adequate. It, therefore, appears necessary that suitable standard grades, with premiums and discounts on mutual basis, should be prescribed and before the nuts are brought to the assembling markets, they should be properly graded. Grading by producers on co-operative basis has been adopted with advantage in the case of several other commodities and the technique can be usefully applied to this crop as well.

There are no standard contracts in use at present in the cashew nut trade. The purchases are generally made either on the basis of samples or after personal inspection. The use of standard grades and contract terms, as pointed out in other reports of the marketing series, is very essential for the development of trade in any commodity. Goods with recognised grades can be easily bought and sold in distant markets without any personal inspection involving a good deal of time and expense. The adoption of standard grades and contract terms for cashew nuts is expected to go a long way in both ensuring a fair return to the cultivator and developing the trade on right lines.

(2) CASHEW KERNELS.

(*a*) **Quality factors.**—The main factors taken into account in grading cashew kernels are (1) size, (2) colour and (3) brokens. Whole kernels and pieces are graded separately. Flavour or taste is also an important consideration, but that is mainly judged from the general appearance and condition of the produce. For example, over-roasted kernels, brownish in colour, are known to have a slightly charred flavour.

(b) Grading for export. (i) **American Standards.**—The kernels exported from India to foreign countries, are graded according to certain standard grades commonly known as "American Standards". These standards are based on "counts" or number of kernels per lb. The graded kernels are required to be fully developed, ivory-white in colour and free from insect damage and black or brown spots. (See plate facing page 19.) The American Standards for both whole and broken kernels are given below :—

Whole kernels.

Grade designation.	Trade name.	Maximum number of kernels per lb.
A	Jumbo	210
B	Extra-fancy	240
C	Fancy	280
CD	Rajas	320
D	Standards	400
DD	Second American	500

Broken kernels.

Grade designation.	Trade name.	Description of quality.
H	Butts	Half kernels broken cross-wise.
J	Splits	Half kernels broken length-wise.
K	Fancy pieces	Big pieces.
L	Standard broken	Medium pieces.
M	Grinding stock	Very small pieces.

Some other descriptions, denoting kernels of certain specified qualities, are also commonly used. For example, the term "scorched" is used for over-roasted kernels and "dessert" for tip burnt and discoloured kernels. The terms "Second wholes" and "Second brokens" generally indicate wholes and brokens of small size and/or inferior colour. The quality of produce graded under each of these nomenclatures may, however, vary, although slightly, from firm to firm.

(ii) **Recovery of different grades of kernels.**—A rough idea of the percentage recovery of different grades of kernels and their relative prices can be had from the following figures. These are based on a month's outturn from local nuts of a premier factory on the West Coast. The recovery of different grades of kernels naturally depends upon the quality of nuts and the efficiency of treatment. For example, there is practically no yield of "210" and "240" counts from African nuts which give more of "280" and "320".

Grades.	Average recovery of peeled kernels per 100 lb. of nuts.	Price per lb. (July 1942).	
	lb.	As.	P.
1. **Best** wholes—			
210 counts	0·80	12	6
240 „	2·12	10	9
280 „	2·94	10	3
320 „	3·37	9	3
400 „	0·71	8	9
Total	9·94		

Grades.	Average recovery of peeled kernels per 100 lb. of nuts.	Price per lb. (July 1942).	
	lb.	As.	P.
2. Wholes of other qualities—			
Second wholes	2·69	8	3
Scorched wholes	0·77	7	9
Dessert wholes	1·94	7	3
Miscellaneous	0·29	7	0
Total	5·69		
3. Best Brokens—			
Butts	1·07	8	0
Splits	0·52	8	0
Brokens	2·51	7	9
Total	4·10		
Brokens of other qualities—			
Butts and Splits	0·82	7	0
Small, etc.	4·51	4–0 to 6–6	
Total	5·33		
GRAND TOTAL	25·06		

(*iii*) **Costs of grading.**—The sorting out of kernels into different grades is done by hand by skilled women workers. For separating small pieces particularly of 'K', 'L' and 'M' grades, sieves of suitable sizes are also used (see plates facing pages 14, 17 and 29). Women engaged for the purpose are generally paid 3½ to 5 annas per day. Sometimes grading is also undertaken on piece-work basis and the charges for sorting 100 lb. kernels may vary from 4 to 6 annas.

(*c*) **Grading for inland markets.**—In the case of kernels meant for consumption within the country, no standard grades are recognised. Although at the time of peeling, kernels are generally sorted out into (1) wholes, (2) splits and butts, and (3) small brokens, the various types of brokens are again mixed in varying proportions with the wholes, when the produce is despatched to different markets (see plate facing page 17). Even in the case of factories which cater for export and get their entire production graded, kernels put on the Indian market are generally mixtures of different grades.

Although the quantities of cashew kernels consumed in India are small at present, the demand is rapidly increasing and the adoption of standard grades for the internal markets at this stage may prove of immense help in developing the trade on right lines. As a considerable quantity of cashew kernels consumed in this country is of mixed quality, it appears necessary that the standard grades for "wholes" for the home market should allow certain specified percentages of brokens, particularly butts and splits.

D.—Packing.

(1) CASHEW NUTS.

Cashew nuts are packed in gunny bags both for purposes of transportation and storage (see lower plate facing page 28). As the outer shell enclosing the kernel is quite hard, gunny packing is considered quite satisfactory.

The quantity of nuts customarily filled in one bag varies in different areas from 126 to 196 lb. The more common fillings are 165 lb. (*i.e.*, 2 maunds), 168 lb. and 175 lb. (*i.e.*, one-fourth of a candy of 700 lb.). As in most of the markets prices are quoted per bag, a higher filling is generally considered an advantage by the dealers. The desirability of adopting a uniform filling is obvious.

(2) CASHEW KERNELS.

(*a*) **Packing for export.**—More or less a standard system of packing is in vogue in respect of kernels exported to foreign countries. These are packed in new tin cans of 4 gallons capacity which are of exactly the same type as those used for filling kerosene oil. Each tin is filled with 25 lb. of kernels, irrespective of their grade. To prevent deterioration in quality, the air in the tin is exhausted by means of a suction pump (see plate facing this page). Certain firms pack their kernels in carbon dioxide which is injected into the tin after the air has been exhausted out. It is reported that kernels packed in vacuum keep well for about a year and those in carbon dioxide for over 2 years. The tins are then packed in wooden cases (two in each case). In pre-war days, the cost of packing used to total about Rs. 1-6-0 per case as detailed below. The costs are now (August 1942) reported to have increased to about Rs. 7-8-0 per case.

	RS.	A.	P.
Two tins at Re. 0-7-0 each	0	14	0
One wooden case	0	5	6
Filling	0	0	6
Vacuumising	0	0	6
Soldering, packing, etc.	0	1	6
Total	1	6	0

(*b*) **Packing for inland markets.**—For distribution in India, cashew kernels are packed mostly in old tins. The system of packing in vacuum is not common. The quantity filled in each tin generally varies from 20 to 25 lb. In the Bombay area, wooden cases are also used for packing kernels. These are lined with paper and each case contains 112 lb. net. In certain parts of Madras, gunny bags are also used, particularly for packing inferior qualities of kernels or brokens. For retail selling, smaller packing of 1 lb., 2 lb., 4 lb., 7 lb., and 14 lb. are also adopted by a number of firms. The kernels which are not packed in vacuum do not generally keep well for more than 3 to 4 months.

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CHAPTER III.—PRICES.*

A.—Introductory.

The prices paid for cashew nuts depend chiefly on the prevailing prices of kernels. The prices of kernels, in their turn, are largely determined by the demand from America. As already stated, nearly three-fourths of the world supply of cashew kernels, of which more than 95 per cent. is contributed by India, is consumed in the United States of America alone. In that country, the demand as well as the prices offered for kernels are influenced to a certain extent by the prices of other nuts, such as Brazil nuts, peanuts, walnuts, etc. Of late, the prices obtained for shell oil, a by-product of the industry, have also been exercising a marked influence on the prices of both nuts and kernels.

B.—World prices of cashew kernels.

An idea of the course of world prices of cashew kernels can be best had from the C. and F., New York quotations for the commodity. The relevant information for the period from 1924-25 to 1941-42 is given below:—

Average annual prices of cashew kernels c. and f., New York.

Year. (April-March)	Shillings. Per cwt.	Year. (April-March)	Shillings. Per cwt.
1924-25	190	1933-34	150
1925-26	190	1934-35	105
1926-27	180	1935-36	90
1927-28	160	1936-37	85
1928-29	150	1937-38	70
1929-30	150	1938-39	90
1930-31	150	1939-40	90
1931-32	70	1940-41	100
1932-33	150	1941-42	150

The abrupt fall in prices in 1931-32 was due to the trade crisis in America commonly known as the Wall Street Crash. During that period, the prices of other nuts were also adversely affected. For example, the prices of Brazil nuts (shelled) in America fell from an average of about 38 cents per lb. in 1930-31 to 25 cents per lb. in 1931-32. The fall in the case of cashew nuts was, however, short-lived and prices soon recovered to their original level.

The declining tendency of prices from 1934-35 onwards can, in a great measure, be attributed to the increased supplies of kernels which became available partly as a result of increased home production and partly due to the large imports of African nuts into India for processing and re-export. In the latter half of 1937-38, due to the rumour that the General Food Corporation of America, the biggest single buyer of cashew kernels, were withdrawing from the trade, there was a steep fall in prices and at one stage in February 1938, the prices fell down to as low a level as 57 shillings per cwt. As soon as the panic was over, the prices regained their former position (see Appendix VII).

The upward trend of prices since the out-break of the present War is largely in sympathy with the general rise in commodity prices. It is, to a certain extent, also due to the increased costs of packing and ocean freights. Owing to the uncertainties of shipping space due to war conditions, the general tendency of exporters in India in recent years has been to unload their stocks as expeditiously as possible and this has had rather a restraining influence on the upward course of prices.

C.—Cashew nut prices in India.

(1) Prices in different markets.

Appendix VIII gives the average monthly prices of cashew nuts from January, 1936 to December, 1942 for five important markets situated in the different producing areas of the country. In the case of certain markets, *e.g.*, Trichur, Panruti and Palasa, it has not been possible to obtain reliable price data for all the months in the year as more than 85 per cent. of the nuts traded in pass into the hands of processors between the months of March and June. A correct idea about the level of prices in different markets can, therefore, be best had from prices prevailing during the main season (March—June). The relevant information for the five selected markets is tabulated below and the data are illustrated in the diagram facing this page.

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*The discussion in this chapter is confined to wholesale prices. The retail prices have been dealt along with retail distribution in the chapter on " Assembling and distribution ".

Average seasonal (March-June) prices of cashew nuts.

(Per maund of 82 2/7-lb.)

Markets.	1937.	1938.	1939.	1940.	1941.	1942.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
West Coast—						
Mangalore	5 0	4 11	4 10	4 15	6 1	5 15
Trichur	4 13	4 8	4 6	4 8	5 12	5 10
Vengurla	*Na*	*Na*	4 15	5 9	6 12	*Na*
East Coast—						
Palasa	4 7	3 7	4 7	5 5	4 10	4 8
Panruti	5 15	4 0	5 7	5 9	5 6	*Na*

Na=Not available.

Among the markets on the West Coast, the prices at Trichur are comparatively lower than those at Mangalore or Vengurla, both of which are important processing centres. Although the price differentials between these markets vary from year to year, the general trend of prices in all the three cases has been more or less similar.

The trend of prices in the markets on the East Coast is, however, not always in line with the trends in markets on the West Coast. The prices in the East Coast markets, which cater primarily for inland demand, are considerably influenced by local conditions. For example, the prices at Panruti were higher than those at Mangalore in 1937, 1939 and 1940, while just the reverse was the case in 1938 and 1941. The fact is that when the crop in the Panruti area is poor, the local processors import their requirements from the West Coast markets. On the other hand, in bumper years, Panruti exports some nuts and/or kernels to the markets on the West Coast for export.

(2) SEASONAL VARIATIONS IN PRICES.

Since during the off-season months, the processing concerns work mostly on imported nuts, the differences between the seasonal and off-seasonal prices are practically non-existent. The point is borne out by the following data:—

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Average half-yearly prices of cashew nuts at Mangalore.

(Per maund.)

Period.	1937-38.	1938-39.	1939-40.	1940-41.	1941-42.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
March—August	4 15	4 13	4 9	4 11	6 10
September—February	3 6	4 13	4 8	4 13	7 4

The comparatively low prices in the later half of 1937-38 were occasioned by the panicky conditions which prevailed in the trade during that period as referred to in a previous section. The rise in prices in the second half of 1941-42 was partly in sympathy with the strong upward tendency in kernel prices and partly due to the extensive damage done to the cashew nut plantations on the West Coast by a cyclone in May, 1941.

In the case of markets like Panruti and Palasa where the trading is more or less confined to local nuts, the general tendency of prices after June is, however, usually upward (see Appendix VIII).

(3) PRICE DIFFERENCES DUE TO QUALITY.

Bold, dry and fully matured nuts which give a higher yield of superior quality kernels than small nuts, are preferred and sell at a premium. But the nuts put on the markets are, generally, in a mixed form. The average quality of nuts from certain tracts are, however, better than those from certain others, and price differences occur in consequence. For example, the nuts received from certain places (including Thodupuzha, Muvvattupuzha, Alwaye and Angamali) in Northern Travancore or from the Irinjalakuda area in the Cochin State, are considered superior to those from the Tiour or Ponnani areas in Malabar. The nuts from up-country centres are considered very inferior. The price differences in the case of nuts from different areas generally range from 3 to 5 annas per maund. The discount in the case of African nuts, which are usually smaller than local nuts, is generally more and may range from 5 to 12 annas per maund.

During the present survey, it was reported that the premium given for quality was generally inadequate. The agricultural officers in different areas were more or less unanimous in their views on the point. It was said that as the quantity of selected nuts, ordinarily put on the market, was small and as it was difficult to handle such small quantities separately, the merchants did not find it profitable to pay high premium for quality. The ultimate result is that the producer does not feel encouraged to improve the quality of his produce.

D.—Cashew kernel prices in India.

(1) BASES OF PRICE QUOTATIONS.

For purposes of export, the prices of cashew kernels in India are quoted on c. & f. basis. This may either be done in shillings per cwt. or in American cents per lb. In the case of inland trade, the basis of quotation in most of the markets in producing areas is a tin of 25 lb. In the Bombay market, the quotations are usually in rupees per cwt. The prices in the up-country consuming centres are quoted on the basis of maunds, local or standard, as may be in use. As pointed out in several other reports of this series, the weights of local maunds differ considerably from market to market and as such, price quotations are not easily comparable. Nor are the quotations for different markets based on any well-defined grades. The desirability of quoting prices on a uniform basis for commonly accepted grades is obvious.

(2) PRICES IN DIFFERENT MARKETS.

There are very little differences in the prices quoted in different markets for supplies to particular foreign ports. Practically the entire export trade in cashew kernels from India emanates from the ports on the West Coast and the freights payable from these ports to ports in importing countries are also generally the same.

As regards inland trade, the price differences between different markets depend mostly on their situation and, as is natural, prices are lower in producing areas than in consuming centres. Appendix IX gives the average monthly wholesale prices of cashew kernels for 5 selected markets, *viz.*, Bombay, Panruti, Palasa, Nagpur and Delhi. As the consumption of cashew kernels is confined mainly to the four winter months from November to February, the price quotations for most of the consuming centres, paticularly those in Northern India, for other months of the year are either not available or are nominal. A fair idea of the price differentials between different markets can, therefore, be had from the prices prevailing during the main season. The following table gives the average seasonal prices in the above five markets for the period from 1936-37 to 1941-42. The data are illustrated in the diagram facing this page.

Average seasonal (Nov.-Feb.) prices of cashew kernels.

(Per standard maund.)

—	1936-37.		1937-38.		1938-39.		1939-40.		1940-41.		1941-42.	
	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.
Bombay	*Na*		26	1	27	14	29	0	30	8	*Na*	
Panruti	29	13	24	5	25	15	32	10	26	7	48	7
Palasa	*Na*		28	12	32	8	34	14	35	2	47	0
Nagpur	32	4	29	12	34	3	36	4	37	10	52	0
Delhi	34	14	31	8	35	2	43	6	39	4	63	12

Na-Not available.

As between markets in producing areas, the prices at Palasa are generally higher than those at Bombay or Panruti. This is largely due to the proximity of the former market to the large consuming centres.

Prices at Nagpur and Delhi, which are important consuming centres, are generally Rs. 3 to Rs. 6 per maund higher than those at Bombay and Palasa from where they draw their requirements. In 1939-40 and 1941-42, however, prices at Delhi were comparatively very high due mainly to transport difficulties and dearth of stocks in the local market.

As will be observed from the relevant diagram, the trend of prices at Panruti is not always in keeping with that at other markets. At this centre, the prices of cashew kernels, like those of nuts are considerably influenced by local conditions (see page 17).

(3) SEASONAL VARIATIONS IN PRICES.

As the production of cashew kernels is spread more or less over the whole year, the seasonal differences in the prices of this product are generally small and are caused more by the position of supply and demand rather than costs of storage and carrying over. The seasonal variations in prices are comparatively more marked in the up-country consuming markets than in surplus areas. The stocks kept in the consuming centres are also comparatively small. The following data which are based on the average prices for the period from 1938-39 to 1940-41 bear out the point :—

Average percentage monthly variations in the prices of cashew kernels from their annual mean.

Months	Bombay.	Nagpur.
September	—3·0	—7·2
October	—2·0	—6·2
November	+0·4	—3·4
December	+2·1	+1·4
January	+2·9	+4·7
February	+1·4	+6·8
March	+1·0	+6·1
April	—0·1	+4·7
May	—0·9	..
June	—0·9	—1·5
July	—0·9	—3·4
August	..	—2·0

The prices are comparatively high from November to February or March when the demand from the home market is at its peak.

(4) PRICE DIFFERENCES DUE TO QUALITY.

(*a*) **Peeled and unpeeled kernels.**—The prices of peeled or blanched kernels are generally 20 to 25 per cent. higher than those of unpeeled ones. As already stated, the recovery of peeled kernels from unpeeled ones averages about 88 per cent. and roughly an expenditure of Rs. 1-8-0 to Rs. 2 per maund is incurred for labour engaged on peeling. The minimum, maximum and average differences in the prices of peeled and unpeeled kernels for certain important markets are shown in the following table :—

Price differences per maund between peeled and unpeeled kernels.

—	Average annual prices of peeled kernels.		Discount in the case of unpeeled kernels.					
			Minimum.		Maximum.		Average.	
	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.
Palasa.								
1939	34	1	6	8	11	0	9	9
1940	33	12	5	11	10	0	7	12
1941	38	14	6	4	12	0	9	4
Nagpur.								
1939	35	10	7	4	12	8	9	7
1940	35	8	8	0	13	0	9	14
1941	39	13	10	0	17	0	12	5
Delhi.								
1939	36	11	6	13	12	3	9	7
1940	43	4	7	12	13	10	10	1
1941	48	3	6	13	11	12	9	3

The variations in differences between the prices of peeled and unpeeled kernels at different periods are caused chiefly by the relative supply and demand positions of the two types of products.

(*b*) **American grades.**—A fair idea of the price differences between the different grades of " whole " and " broken " kernels can be had from the following monthly prices for 1941 :—

Average wholesale prices of cashew kernels (c. & f., New York) at Quilon.

(In cents per lb.)

Months.	Wholes.				Brokens.		
	210 counts.	240 counts.	320 counts.	450 counts.	Butts.	Splits.	Large pieces.
January . . .	21½	19½	18	17	16	15	15
February . . .	21	20	18	17	16	15½	12
March	22½	20½	19	18	17	16½	16
April	25½	23½	21½	20½	19½	19	18½
May	25½	23½	21½	20½	19½	19	18½
June	30	28	26	25	24	23½	23
July	31	29	27	26	25	24½	24
August	33	31	29	28	27	26½	25
September . . .	33	31	27½	28	26	24	21½
October . . .	33	31	28½	28	26	24	22½
November . . .	33	31	28½	28	26	24	22½
December . . .	33	31	28½	28	26	24	22½

The price differences as shown above are due mainly to the size of the whole or broken kernels. A further difference of 5 to 15 per cent. in prices can occur due to differences in colour and in the general condition of the produce (see pages 13 and 14).

(c) **Qualities of kernels for the home market.**—As already stated, the prices of cashew kernels meant for consumption within the country are not quoted on the basis of any regular grades. Nor are the wholes or brokens classified into several grades as is done in the case of export trade. A reasonably correct idea of the price differences between the different qualities of kernels, as ordinarily put on the Indian market, can be had from the following table :—

Average annual prices of different qualities of cashew kernels at Bombay.

(Per standard maund.)

—	Wholes.		Butts & Splits.		Pieces.	
	Rs.	A.	Rs.	A.	Rs.	A.
1938	27	1	23	7	17	11
1939	27	9	24	7	20	3
1940	28	9	23	14	21	6
1941*	30	8	25	4	23	0

*Average for the period from January to August.

The prices of splits and butts are generally about 15 per cent. lower than those of wholes. The corresponding difference in the case of pieces ranges from 25 to 35 per cent.

E.—Comparison with the prices of other nuts.

Cashew kernels in India are consumed practically for the same purpose as certain other dried fruits including almonds, walnuts and pistachios. There is not, however, any correlation between the prices of these several products, as is shown by the following table :—

Average seasonal (February-March) prices of certain dried fruits.

(Per standard maund.)

Years.	Cashew kernels. (Peeled.)		Almonds. (Unshelled.)		Walnuts. (Shelled.)		Pistachio nuts. (Shelled.)	
	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.
1937-38 . . .	31	8	23	14	16	12	85	6
1938-39 . . .	35	2	20	11	22	13	89	1
1939-40 . . .	43	6	22	9	20	1	81	6
1940-41 . . .	39	4	24	5	26	6	80	4
1941-42 . . .	63	12	28	10	40	8	152	9

Unlike the case of cashew kernels, India depends to a considerable extent for its requirements of almonds, walnuts and pistachio on the supplies from foreign countries and as such Indian prices of these products are influenced largely by the prices of imported articles.

F.—Marketing intelligence.

As in the case of other agricultural commodities, the prices of cashew nuts and kernels are considerably influenced by the information which may be available regarding (1) production, (2) demand as indicated by trade movements, (3) stocks and (4) prices in competing areas. The information which is ordinarily available to the cashew trade on the various points is, however, meagre.

No regular statistics of the area or production of cashew nuts are collected at present by official agencies. Some rough estimates of production are prepared by a few large firms. These are based mainly on the information regarding market arrivals in different areas collected through trade representatives. In the absence of any regular statistics of production, such estimates are quite useful, but they are usually regarded as commercial secrets and are not published for general information.

No information regarding the quantities of kernels processed in the different parts of the country is published either. Large processing concerns which are estimated to handle more than 85 per cent. of the total quantity, however, keep regular records of their turnover. In certain cases the relevant information is collected and compiled by the local trade associations. No all-India estimates are, however, prepared at present. The work could be usefully undertaken, say, by the Southern India Cashew Nuts Manufacturers' Association, Quilon, the members of which are reported to handle more than half of the local produce.

The statistics of imports of nuts as well as those of exports of kernels from and to different foreign countries are regularly published in the montbly and annual issues of the Sea-borne Trade of India. As the quantities of kernels which enter the inter-provincial or state trade are small at present, they are not separately recorded and are combined with other dried fruits. At certain railway stations, however, where the traffic in nuts and/or kernels is of sufficient importance, separate records of movements of these commodities are maintained for official use.

Excepting the prices of cashew kernels which are included in the price lists of certain firms prepared mainly for circulation to their clients in different markets, no other information on prices or stocks is published at present. Individual firms arrange to obtain whatever information they can get from their representatives in different inland as well as foreign markets.

As the trade in cashew kernels has considerably increased during recent years, it is very desirable that adequate information, particularly regarding the production and prices of kernels, should be regularly made available for general information. The wide dissemination of the necessary information would perhaps go a long way in encouraging direct trading between the producing and consuming centres and in developing the trade on sound lines.

CHAPTER IV.—ASSEMBLING AND DISTRIBUTION.

A.—Introductory.

In the case of the cashew industry, the trade movements fall mainly under three heads, *viz.*, (1) assembling of local crop from scattered plantations and villages to processing centres, (2) importation of foreign nuts and their distribution from ports to factories and (3) distribution of kernels from processing factories to inland and foreign markets. Although a small quantity of kernels is also distributed for local consumption in producing areas by petty dealers and hawkers after they have been processed in their homes, the practice is not of any great commercial importance.

B.—Assembling of local crop.

(1) FROM FARMS.

A major portion of the cashew nut crop in India is collected from farms by itinerant dealers who, during the season, go about from house to house for the purpose. These dealers quite often employ a number of local boys to assist them in the work. A small quantity of nuts is also disposed of by farmers to local merchants and grocers as well as in nearby *shandys* or weekly or bi-weekly markets. This may be done by way of barter, *i.e.*, in exchange for daily necessities of life, or for cash. The quantity taken by producers direct to wholesale merchants or to processing factories is, on the whole, small and does not exceed 5 to 7 per cent. of the total crop. This is generally done by owners or lessees of large plantations. As already stated, the production of cashew nuts on plantation basis has been undertaken only in recent years and a major portion of the crop is collected from scattered trees. The outturn of an average farmer, who generally owns only a few trees, is rather small. Further, as the collection of nuts is spread over a long period of about 3 months and as small producers do not generally accumulate their collections, mainly for want of ready money, for more than a week, the nuts which a farmer may have to sell at a particular time may not exceed a few pounds. As it is, most of the producers do not find it worth their while to take their nuts to large town markets or factory centres.

The prices obtained by farmers by selling their produce to petty dealers in small lots are naturally low. The margin of profit in the case of such dealers is generally estimated to be between 10 and 15 per cent. of the value of the produce. The prices paid by these dealers are usually based, according to local customs, on measures or counts instead of on weight as is the general practice in wholesale markets. Such being the case, producers find it difficult to compare their prices with those in the wholesale markets, even if they happen to know the same. Fair prices could be secured for small producers by pooling the produce of different farms and disposing of the same on co-operative basis. This has not been attempted so far in any area and needs looking into.

(2) FROM RURAL MARKETS AND SHANDYS.

Itinerant dealers are again the most important buyers in periodical markets or *shandys* held in rural areas. During the season, a number of wholesale merchants and factories also open their depots in important producing areas for collecting cashew nuts direct from farms. Besides direct purchases, a large quantity of cashew nuts assembled by petty dealers from farms and *shandys*, is also disposed of at such depots. As the competition between the buyers in such markets is generally keen, the sellers are able to realise a fairly reasonable price for their produce.

(3) FROM LARGE WHOLESALE MARKETS.

Cashew nuts are brought for sale to the large assembling markets chiefly by itinerant dealers. In these markets, nuts are handled by the same wholesale merchants who deal in other agricultural produce. While some of these firms work on their own account, others operate as commission agents of processing factories. A number of factories also open their own buying depots in such markets. The latter practice has become more common in recent years and it is estimated that roughly half of the requirements of factories are now purchased at their own out-station buying depots.

A very large proportion of the quantity purchased by merchants is passed on to factories after drying, etc. This may be done direct or through brokers or the local agents of factories concerned. Only a few merchants keep stocks for sale during the off-season. The quantities so stocked do not generally exceed 5 per cent. of the total crop. As it is, the factories themselves have to stock practically their entire requirements.

Appendix X gives a list of important assembling markets for cashew nuts situated in the different producing areas of the country together with certain other relevant particulars, including (1) their approximate annual turn-over and (2) the connected processing centres. Most of these markets are themselves important factory centres. The nuts from markets where cashew nut factories have not been established yet or from those where the quantities collected exceed the requirements of local factories, are carried to other processing centres. For example, the cashew nuts collected at Trichur are partly despatched to the factories at Mangalore and partly to Quilon. In Bombay, the nuts collected at Ratnagiri are processed in the factories at Malvan and Vengurla; while the produce from the markets of Anokla, Honvar, Kunvar and Kumta in the district of Kanara, goes to Mangalore. A large part of the nuts from the markets in Tanjore and Trichinopoly districts, is processed at Panruti. The nuts from the markets in Orissa are collected at Palasa and a part of the same is sent from there to the factories at Mori and Vetapalam.

(4) MARKET PRACTICES AND COSTS.

(*a*) **Rurar markets.**—In the periodical markets or *shandys* held in rural areas, as also in the case of nuts sold on farms, the produce is purchased after personal inspection by buyers. Prices are settled by mutual bargaining between the buyer and the seller. They are quoted on the basis of weight, measure or count, according to local practice. Payments are made soon after the produce has been delivered. In certain cases in which the sellers have received advances from the buyers, the sale proceeds may be adjusted against outstanding loans.

No merchandising charges are generally levied on transactions in rural markets. A market fee is sometimes charged. In the villages of Madras, it is generally 6 pies for a head-load and 4 annas for a cart-load. In a number of markets it is customary to allow an additional quantity of nuts to the buyer by way of quality allowance. This has, however, nothing to do with actual quality of the produce which is duly taken into account while settling prices. The customary allowances for quality which generally vary from 3 to 5 per cent. of the weight of the produce, introduce an unnecessary complication in the village transactions and are prejudicial to the interests of producers.

(*b*) **Town markets.**—In large wholesale markets, cashew nuts are generally sold through brokers. The brokers go with the samples of the produce to firms interested in buying, obtain their quotations and arrange for sale. At times when there is a good demand for nuts, the buyers themselves visit the business premises of selling merchants and make purchases after inspecting the produce personally. Sometimes they arrange for the same through brokers.

In town markets, sellers from rural areas have generally to pay commission to the merchant through whom they may sell. They may have also to pay for (1) municipal fees, (2) unloading of the produce, (3) weighment, (4) brokerage, (5) charity and (6) any other customary charges which may be levied in a particular market. The merchandising charges payable in certain important markets are summarised below :—

Merchandising charges payable by cashew nuts sellers.

(Per bag of 2 maunds.)

—	Palasa.		Quilon.		Trichur.		Calicut.		Malvan.	
	As.	P.	As.	P.	As.	P.	As.	P.	As.	P.
Commission	1	0	2	6	2	0	3	6	2	3
Municipal fees	0	6	—		—		—		1	6
Labour for unloading	—		0	10	—		—		—	
Weighment	0	6	—		—		—		1	6
Brokerage	—		0	7	0	6	0	6	—	
Charity	—		—		0	5	—		1	0
Miscellaneous	1	3	0	1	5	1*	—		0	7
Total	3	3	4	0	8	0	4	0	6	10

*Including discount at 2½ per cent. on value.

Taking the average prices of nuts at Rs. 4-8 per maund, the incidence of market charges, in terms of value, ranges from Rs. 2/4/- to Rs. 5/9/- per cent.

In cases where the factories purchase through commision agents, they have to pay, besides the actual expenses, for labour, cartage, brokerage, correspondence, etc., a commission of Rs. 1-8 to Rs. 2-0 per cent. The total expenditure incurred by factories while purchasing at Trichur, one of the most important markets for cashew nuts, amounts to Rs. 1-12 per candy of 6 cwt. (or about 5 per cent. on value) as shown below :—

	Rs.	A.	P.
Commission	0	14	0
Labour for drying, packing, etc.	0	6	0
Cartage to drying yards	0	7	0
Allowance for postage, travelling, etc.	0	1	0
Total	1	12	0

or 3 annas 5 pies per maund.

The factories have also to bear the loss due to driage and pay for transportation costs.

C.—Assembling and distribution of imported nuts.

(1) ASSEMBLING.

The imports of cashew nuts into India from foreign countries are arranged chiefly by some 20 firms working at the port of Bombay. A number of these firms have their own branches at the East African ports from where this country supplements it supplies of nuts. A large quantity of the nuts imported is purchased on forward delivery basis in August-September. The shipments of the new crop generally start towards the end of October.

Before the outbreak of the present War, the African quotations for cashew nuts used to be on f. o. b. basis, but now due to the uncertainties of shipping space and freight rates, practically all the imports are arranged on c. i. f. basis. As the steamers plying between India and Africa do not generally call at most of those ports where processing factories are situated (*e.g.*, Malavan, Vengurla, Mangalore, Calicut and Quilon), the nuts from Africa are generally booked, in the first instance, to Bombay. From there they are carried by coastal steamers or country crafts to the ports concerned. In certain cases, the terms of shipments include provision for free delivery at certain other ports. The ports other than the main port, to which the cargo could be directed, have to be declared by the importers in advance.

In pre-war days, the costs of movement from African ports to Bombay used to amount about Rs. 20 per ton as shown below :—

	Cost per ton.		
	Rs.	A.	P.
Freight @ 27½ shillings per ton less 10 per cent. discount	16	8	0
Insurance	0	10	0
Port dues at Bombay	1	14	0
Labour	1	2	0
Total .	20	2	0

Due to War conditions, the costs have considerably increased in recent years. The freight and insurance rates from African ports to Bombay which used to be 27½ shillings and 10 annas per ton are now (August 1942) quoted at 70 shillings and £ 2 (Rs. 26-10-8) per ton respectively.

(2) DISTRIBUTION.

The processing factories generally purchase their requirements through their representatives or commission agents in Bombay or some other ports. As in the case of importers, the factories also purchase nuts in advance and, in their turn, make forward sales of kernels, particularly to buyers in the United States of America. The commission charged from factories generally varies from 8 annas to Re. 1 per cent. on the value of the produce. The factories have also to pay the expenses incurred on loading the goods in boats or steamers, freight and booking charges, etc. For example, the expenditure from Bombay to Vengurla amounts to about Re. 0-6-6 per bag includng Re. 0-1-6 for labour at Bombay, 4 annas for freight and 1 anna for labour and cartage at Vengurla.

D.—Wholesale distribution of cashew kernels.

(1) FOR INLAND MARKETS.

The wholesale distribution of cashew kernels for inland consumption is effected by wholesale nerchants who deal in other dried fruits, spices, etc., as well. These firms either obtain their requirenents direct from the processing factories or purchase the same in surplus distributing markets, or example Bombay.

Processors as well as large distributing firms in producing areas quote cashew kernels on o. r. basis. Importing firms have, therefore, to pay only freight and such incidental charges s labour, cartage, octroi, etc., which they may have to incur at their own end. The cost on ibour and cartage is generally between 1 anna and 2 annas per maund. The octroi charges in ifferent markets, however, vary from about ½ anna per maund to as much as Rs. 1-8 per maund.

Appendix XI gives a list of important distributing centres for cashew kernels. As already tated, the total consumption of cashew kernels in this country amounts to about 121,000 maunds. major portion of this quantity is distributed by the processing factories at Palasa, Vetapalam nd Panruti. The kernels from the factories on the West Coast are distributed mainly through lombay and to some extent through Karachi. As the demand for cashew kernels is limited, the mall markets generally obtain their supplies from the neighbouring large distributing centres. 'alcutta, Cawnpore, Delhi, Rawalpindi, Indore, Nagpur, Ahmedabad, Belgaum, Hyderabad (Deccan) nd Bangalore are some of the more important distributing centres which, besides meeting local equirements, also cater for the demand from the neighbouring markets.

(2) For foreign markets.

The distribution of cashew kernels to foreign markets is carried out chiefly by the processing factories themselves. Certain large factories have their own representatives or commission agents in foreign markets, particularly at New York. Some of the processing concerns have formed themselves into corporations and arrange their exports through a common office. Factories which have no direct connections in foreign markets sell their produce either to other factories having direct export arrangements or to merchants or commission agents at Bombay who also handle a small part of the export trade in cashew kernels.

The commission agents or brokers in New York keep their principals in India fully informed about the position regarding stocks, course of prices, demand, etc., and arrange to secure orders from buyers in America. These agents are paid by the shippers in India generally at the rate of 1½ per cent. on the value of goods sold through them.

Cashew kernels are sold to foreign countries generally on c. & f. basis. The sales are largely concentrated from September to December when the prices are quoted on the basis of African nuts and from January to March during which period the quotations are based mostly on the prospects of the Indian crop. All sales are covered by written contracts. The goods are generally shipped within 3 to 4 months of the date of contract. The buyers have to open in favour of the seller an irrevokable credit for 95 per cent. of the invoice value which can be drawn against bills of lading. The balance of 5 per cent. is reserved against possible claims for quality, etc.

As most of the processing factories are situated on small ports which are generally not touched by large sea-going vessels, a very large proportion of the export trade in cashew kernels passes through the port of Cochin. Small quantities are also shipped direct from Mangalore, Calicut, Bombay, Coconada and Madras. Cashew kernels are carried from factories to the ports of shipment in light steamers or country crafts. Exporters either themselves arrange for the necessary transport or it may be done through some regular shipping agents. For example, a considerable proportion of the cashew trade between Quilon and Cochin is handled by Messrs. Madura and Co., of Cochin. This firm has its out-agency at Quilon for booking the local traffic and it possesses a regular fleet of steam barges for carrying the goods.

The sea freights for cashew kernels are generally quoted on the basis of a shipping ton of 50 cubic feet. The ton-space, on an average, accommodates 28·25 cases each of them containing 50 lb. of kernels. Before the War (1939) the freight rates from Cochin to New York and London used to be about Rs. 55 and Rs. 50 per shipping ton respectively. The freights have considerably increased during recent years—the rate from Cochin to New York in August having been 150 shillings or Rs. 100 per shipping ton.

An idea about the expenditure which may be incurred in carrying cashew kernels from India to America can be had from the following data :—

Expenditure incurred on 1,223 cases of cashew kernels shipped from Bombay to New York in July 1942.

सत्यमेव जयते

—	Rs.	A.	P.	Rs.	A.	P.
		Dr.			Cr.	
Customs Manifest	3	0	0			
Port Trust Fee	141	10	0			
Cooly charges for loading in lighters	24	8	0			
Lighterage	500	0	0			
Repairing and incidental charges	42	0	0			
Bills of Lading, Stamps, etc.	6	0	0			
Muccadamage (Labour)	114	10	6			
Sundries	350	0	0			
				1,181	12	6
Freight paid				4,693	5	0
	Total			5,875	1	6

or about Rs. 4-12 per case.

E.—Retail distribution of cashew kernels.

(1) AGENCIES ENGAGED.

The retail distribution of cashew kernels is carried out mainly by hawkers, provision merchants, fruit sellers and restaurants, hotels, coffee houses and sweetmeat shops.

As already stated, the consumption of kernels in rural areas outside the producing tracts is negligible. In the urban areas, however, provision merchants all over the country keep a small quantity of cashew kernels along with other articles. They deal only in unfried kernels. As a large quantity of cashew kernels in Northern India is consumed in unfried form, the provision merchants constitute by far the most important agency for distributing cashew kernels in that area. Cashew kernels are also retailed at big fruit shops together with other dried fruits.

Restaurants and hotels play a very important part in distributing cashew kernels, particularly in Southern India. Fried and salted kernels mixed or unmixed with other preparations are commonly served at these places and are also sold in small packets. Salted kernels are also served at coffee houses, a large number of which have recently been opened by the Coffee Cess Committee. The popularity of salted kernels in Northern India is indeed largely attributable to the efforts made by these coffee houses.

(2) COSTS AND RETAIL MARGINS.

Retailers generally purchase in small quantities varying from 10 to 50 lb. at a time. They usually do so on credit. Ordinarily they do not have to incur any expenditure, except that on carrying the produce to their premises and for retailing the same. In some markets, however, certain merchandising charges are levied on all purchases including those made by retailers. For example at Delhi the buyers of cashew kernels have to pay the following charges* :—

	Charges per maund.		
	Rs.	A.	P.
Weighment at 5 annas per cent.	0	2	6
Shagirdi (fee for apprentices) at 6 pies per maund	0	0	6
Cooliage at 6 pies per maund	0	0	6
Nawan (allowance for credit) at Rs. 1-9 per cent.	0	12	6
Charity at 3 pies per maund	0	0	3
Total	1	0	3

If, however, the buyer pays cash, he gets a rebate of 10 annas per cent. In that case, the total expenditure would be Re. -/11/3 per maund.

Generally the retail prices are 10 to 25 per cent. higher than the wholesale ones. In Delhi, the difference between the two sets of prices was found to range from 10·7 to 14·2 per cent. A careful investigation made in Bombay revealed that while the difference between the retail and wholesale prices was only 17 per cent. in the case of ordinary kernels, it was as much as 45 per cent. in the case of salted ones. As there were not many firms dealing in fried and salted kernels, the margin in the latter case was comparatively high.

After allowing for the retailing costs, the retailer's profits may range from 6¼ to 18¾ per cent. (or 1 to 3 annas per rupee).

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* The price of cashew kernels has been taken at Rs. 50/- per maund for the purpose of calculating these charges.

CHAPTER V.—BY-PRODUCTS.

The main by-products of the cashew nut industry are (1) apples, (2) shells, (3) shell oil and (4) peels. Excepting shell oil, the other products are only partially utilized at present. With proper research and propaganda they could however, be put to many more profitable uses.

A.—Cashew apples.

(1) PRODUCTION.

Cashew apples are pear-shaped and look like over-ripe apples. They are simply the swollen peduncles upon which the nuts are borne, although quite often they are wrongly termed as 'Cashew fruits'. The yield of cashew apples depends upon those very factors which influence the yield of nuts and it is generally 4 to 5 times that of nuts. The information collected on the subject in the Bombay Province showed that the yields from fully grown trees vary from 100 to 150 lb. of apples including 20 to 25 lb. of nuts. Taking the country as a whole, the average outturn of cashew apples is estimated to be about 75 lb. per tree. On this basis, the total production of cashew apples in India would be approximately 5,500,000 maunds.

In the light of the data collected at the Nileshwar Agricultural Research Station, Madras, cashew apples have been classified, chiefly on the basis of their colour, into two main groups, *viz.*, (1) red and (2) yellow. Each type includes a number of shades of the main colour. Although red fruits are slightly heavier than yellow ones, the nuts from the two types show no differences in their quality or weight.

(2) UTILIZATION.

Cashew apples form a wholesome food. Their juice is particularly rich in sugars. As such, it can be boiled into syrups or used for preparing liquors or vinegar. In India, however, only a small proportion of the total production of cashew apples is utilised for edible or industrial purposes. Although in all the producing areas of the country cashew apples are used as fresh fruits and also as vegetables the total quantity so used seldom exceeds 15 per cent. of the total production. It may be added that the use of cashew apples is practically confined to the rural areas where cashews are actually grown. The quantity sold in nearby urban markets may form only about 1 per cent. of the total crop, while there is no trade in this product with distant markets.

One reason why cashew apples are not used to a greater extent for edible purposes than at present is that a large part of the crop is harvested while the apples are not fully matured and most of such apples taste bitter. Cashew apples, if taken in excessive quantities, are also said to produce diarrhœa. Further as the keeping quality of cashew apples is very poor they cannot be conveniently transported to distant markets.

Cashew apples are not used for any large industrial purposes either. Small quantities of apples are reported to be utilised only for illicit distillation and in certain cases for preparing vinegar. Until about 5 years back, the juice of cashew apples was also used for distilling in government factories at Chawka and Radey in the Ratnagiri district of Bombay. The licensed agents of these distilleries used to collect juice from nearby villages and pay for the same at -/4/6 to 6 annas per tin of 4 gallons. The quantity of apples used for this purpose was, however, estimated to be only about 2 per cent. of the local production. In pursuance of the prohibition policy of the Bombay Government these distilleries were closed in 1938. As it is, more than 80 to 85 per cent. of the total production of cashew apples is simply wasted.

In certain other countries of the world, however, cashew apples are used to a very large extent for preparing many edible products and drinks. For example, in Brazil, cashew apples are commonly used for preparing jams and vinegar. The jam from cashew apples has a pleasant aroma. In that country a special drink is also prepared by fermenting the juice of cashew apples with sugar. It is known as "Cajudo" by the Brazillians and as "Vino de Maronon" by the Spaniards. In Goa, the juice of cashew apples is used to a very large extent for distilling in government factories. It is reported to yield a very strong liquor. The utilization of cashew apples in India for the various purpose referred to above, deserves attention.

(3) PRICES.

In rural areas, cashew apples seldom fetch any price. The prices paid for these apples in the urban areas also are generally very low. Although in the beginning of a season, cashew apples may sell at about one anna per dozen, the prices fall to less than a quarter of an anna per dozen as the season advances. At times when supplies are excessive, the prices fall to almost nothing and are not even sufficient to cover the costs of transportation.

B.—Shells.

The shell or rind of cashew nuts is prized mainly for its oil content. Shells form about 70 to 72 per cent. of the weight of the nuts. The actual quantity of shells obtained, say, from 100 maunds of nuts is, however, only 60 to 65 maunds, since a part of the shell oil is burnt or is extracted during the roasting process. A very large quantity of the shells obtained is used as fuel in the processing factories. The shells of even roasted nuts contain a good proportion of their oil which can be extracted by proper treatment. This, however, is not being done at present.

Round about Panruti in the South Arcot district of Madras, where cashew nuts are processed in a raw state, the shells obtained are used for extracting oil. In that area the price of shells generally ranges from 8 annas to 12 annas per bag of 125 lb. Cashew nut shells are not marketed in any other area except perhaps for use as fuel, particularly in the brick industry.

C.—Shell oil.

(1) PRODUCTION.

The oil content of cashew nut shells is estimated to range from 25 to 30 per cent. by weight. The oil content is much less in African nuts and does not exceed 15 to 20 per cent. The actual recovery of oil, however, varies from less than 2 per cent. in the case of nuts roasted in rotary cylinders to about 15 per cent. in the case of nuts processed in oil baths.

The total production of oil on the West Coast of the country, where a large quantity of the nuts is processed in oil baths, is now estimated (1942) at about 350,000 gallons or nearly 1,500 tons of 235 gallons each. Production has considerably increased during the past 2 or 3 years. The production of oil in the Panruti area of the South Arcot district amounts to approximately 10,000 gallons. In this area the oil is extracted by smouldering the shells in iron drums (see upper plate facing this page). The oil exuding out of the shells drips down through a small hole at the bottom of the drum and is collected in a kerosene tin. From 125 lb. of shells, nearly 2½ to 3 gallons of oil are obtained. The recovery of oil, therefore, averages about 9 per cent. on the weight of shells. The oil obtained by this process is, however, rather crude and has to be refined before export. It may be added that shell oil is not produced in any other country of the world at present.

(2) UTILIZATION.

The oil extracted from cashew nut shells is reddish brown in colour and its main constituents are anacardic acid and cardol. In India it is used mostly by fishermen as a preservative for their boats and nets. It also serves as a good protection against damage by white ants to furniture, books, etc. This oil is also prized for its medicinal properties.

A major proportion of the shell oil is, however, exported to foreign countries after it has been refined. It may be noted that the use of shell oil for industrial purposes has been developed only during the past 6 or 7 years as a result of intensive research carried out, particularly in the United States of America. In that country, shell oil is now used in the various industries concerned with the preparation of different kinds of varnishes, moulding compositions, insulating coatings, inks, etc. Recently shell oil has been found to be of immense value in the United States of America for the production of munitions. The total exports of this product from India, which averaged 1,073 tons during the first three years of war, increased to 1,910 tons in 1942-43. As already stated, India is at present the sole supplier of shell oil. Due to the pressing demand from the War industries, some arrangements have recently been made to develop the production of shell oil in Brazil.

(3) SCHEME FOR AN INCREASED SUPPLY OF SHELL OIL.

The Government in the United States of America has been keen to ensure a regular and increased supply of shell oil for War industries. Besides giving a high place to this product on the priority list for shipping, it was ordered by that Government in November, 1941, that the imports of cashew kernels would be permitted into their country only if they were accompanied by a stated proportion of shell oil. The arrangement did not, however, work well, as due to dearth of tonnage, shipments of cashew kernels were very irregular. Since cashew kernels form only a luxury article of food, it was also not considered advisable to put them on the priority list. To get over these serious difficulties, the Government of the United States of America offered to pay a sufficiently high price for oil, *i.e.*, $ 475 a ton f. o. b. Cochin. With this rate for oil, producers can be paid a fair minimum price for their nuts, irrespective of the demand for cashew kernels or their prices. On the basis of the proposals put forth by the United States of America's Government a scheme was drawn by Messrs. Peirce Leslie and Co. of Mangalore for ensuring a continuous and increased supply of shell oil. The scheme with certain modifications was approved temporarily by the Government of India in June, 1942. The essential points of the scheme are summarised below.

(1) The nuts are to be processed by Messrs. Peirce Leslie and Co. of Mangalore (hereafter referred to as the company) at their factory at Kundra (Quilon). The company has to run their plant on 24 hours a day basis and is not to process its own nuts as long as nuts are available from other factories for the purpose.

(2) Any cashew nut factory can tender nuts to the company for preliminary processing in lots of 500 bags of 168 lb. each.

(3) The company has to return back the processed nuts to the respective owners and pay Rs. 7-8-0 per bag for the oil exuded out from the shells during processing.

(4) The company has also to arrange for the shipment of oil and is to be paid : (*a*) Rs. 228-8-0 per ton of oil for processing the nuts, (*b*) actual costs of containers and (*c*) charges incurred for placing the oil on board (estimated at Rs. 6-8-0 per ton).

(5) The surplus (if any) left at the end of the season, after making all payments from the price recovered for oil, is to be distributed on *pro-rata* basis to the various parties whose nuts are processed.

(6) For the purpose of this scheme, two bags of African nuts are to be counted as equal to one bag of Indian nuts.

The scheme is working satisfactorily at present (August, 1942).

(4) PRICES.

The prices of unrefined shell oil, as extracted in the Panruti area of Madras, have ranged during the past 3 years (1939-40 to 1941-42) from 6 annas per tin of 4 gallons to Rs. 1-6-0 per tin as shown in the following table :—

Prices of crude shell oil at Panruti.

(Per tin of 4 gallons.)

——	1939-40.			1940-41.			1941-42.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
April	0	12	0	0	12	0	0	10	6
May	0	11	0	0	9	0	0	11	0
June	0	10	6	0	8	6	0	12	0
July	0	11	0	0	6	6	0	12	6
August	0	11	0	0	6	0	0	15	0
September	0	10	0	0	6	6	1	0	0
October	0	12	0	0	9	0	1	2	0
November	0	13	0	0	7	0	1	4	0
December	1	3	0	0	10	0	1	4	3
January	0	14	0	0	10	0	1	5	0
February	0	13	6	0	10	0	1	5	0
March	0	12	6	0	10	0	1	6	0

The unduly low prices from May to August 1940 were brought about chiefly by the large stocks which accumulated at Panruti during that period due to transportation difficulties. The rise in prices since August 1941 is largely in sympathy with the rise in the prices of other commodities, particularly lubricants.

No price data for refined shell oil have been available. At present, this type of oil is being handled only by two firms and all the essential information is treated as a trade secret. Since June, 1942, the Government of the United States of America has agreed, as already stated, to pay for shell oil at $475 per ton of 235 gallons each f.o.b. Cochin. This works out to Rs. 1-15-3 per tin of 4 gallons.

D.—Peels.

The kernels obtained after shelling have a reddish brown seed coat or test which is removed by peeling. The weight of peels forms about 12 per cent. of the weight of kernels. Taking into account the total quantity of kernels processed in the country, the quantity of peels obtained in a year amounts to about 75,000 maunds. It includes a small quantity of dust and small pieces of kernels which are generally mixed with peels. A major portion of this quantity is used as fuel after mixing with cow dung, although in some cases, the product may be fed to poultry or cattle. Cashew kernel peels form a wholesome feed for poultry, etc., as is obvious from the following analytical results :—

	Per cent.
Water	8·1
Proteins	7·6
Fat	12·3
Carbohydrates	59·2
Fibre	11·0
Ash	1·8

It is unfortunate that such a nutritive product should be used as fuel. The matter deserves the attention of the Agricultural and Veterinary Departments.

SUMMARY.

Chapter I.—Supply and utilization.

The cashew tree is met with in many tropical and sub-tropical parts of the world. It thrives under varying soil and climatic conditions. In India it grows on the laterite soils on the west Coast with an annual rainfall of 120 to 150 inches and does equally well on the sandy soils of the East Coast having a rainfall of about 35 inches. It is one of the hardiest of drought resisting plants, although it cannot withstand frost. A large number of cashew trees grow wild.

The cashew tree was until lately valued mainly for the kernels extracted from its fruits or nuts. The oil contained in the shells enclosing the kernels has recently been found of use in many important industries.

Statistics regarding the production or trade in cashew nuts for the different countries of the world are not published. From the information available, it seems that the production of cashew nuts is of considerable commercial importance only in India, East Africa and Brazil.

The international trade in cashew kernels has developed only during the past 20 years. The quantities handled upto 1925 did not exceed 50 tons. The total for 1941 was nearly 20,000 tons. About 95 per cent. of the international demand for cashew kernels is supplied by India alone. The small balance is made up by shipments from Brazil. The trade from Africa is mainly in cashew nuts which are shipped to India for being processed and re-exported as kernels. The United States of America, Canada and the United Kingdom are the biggest buyers of cashew kernels with steadily increasing demand in many other countries.

The cashew tree was introduced in India about 400 years back mainly for the purpose of checking soil erosion on coastal lands. Until recently it used to be grown mostly for fuel purposes on waste lands and slopes of hills unsuitable for raising other crops and the collection of nuts was only a secondary consideration. The systematic cultivation of cashews on a plantation basis has been taken up only during the last 15 years or so with the development of the export trade in cashew kernels.

Area and production statistics of cashew nuts for the different provinces and States in India are not reported. Estimates of area occupied by cashew trees in certain tracts were prepared in connection with the present survey but the information was not found to be of much practical use in estimating production since the number of trees per acre and the yield obtained per tree vary considerably.

The cashew trees may number from 50 to 250 per acre although 100 trees per acre is considered to be the optimum. The yields of cashew nuts per tree generally average about 20 lbs. on the West Coast and 30 to 40 lbs. on the East Coast.

The production of cashew nuts in India during the triennium ending 1940-41 averaged 45,000 tons per annum. Of the total production approximately 50 per cent. is contributed by Madras, 20 per cent. by Travancore, 16 per cent. by Cochin and 10 per cent. by Bombay. The balance is covered by the produce from Orissa, Bengal and Mysore. In the case of Madras, the production of cashew nuts is concentrated mainly in the districts of South Kanara and Malabar on the West Coast and Tanjore, South Arcot, Vizagapatam and East Godavari on the East Coast. In Bombay Province the cashew area is confined mainly to the coastal districts of Ratnagiri and North Kanara. Although more than 98 per cent. of the total production of cashew nuts is drawn at present from coastal lands, the plant has been successfully introduced, in recent years, in the forest areas of Mysore State.

With a rapid increase in the export demand for cashew kernels, the returns from cashew plantations have considerably increased. The average net income from cashew plantations was estimated, on the basis of cashew nuts pre-War price of Rs. 4-8-0 per maund, at Rs. 85-0-0 per acre. The corresponding figure for Coconut plantations was Rs. 35-0-0.

The market supply of cashew nuts is estimated to have increased nearly 10 fold during the last 15 years. This has been due partly to the planting of new areas and partly to the better collection of nuts from old trees. As a large number of new plantations have not yet reached their full bearing capacity, it is estimated that the production from the existing plants will go on increasing at the rate of at least 5 per cent. every year for the coming 10 years or so.

Although local production is more than sufficient to meet the requirements of the home market, it falls much short of the *export* demand for kernels. Considerable quantities are, therefore, imported every year, mainly from East Africa. The imports of cashew nuts during the triennium ending 1940-41 averaged about 28,000 tons. The African nuts are of smaller size compared with Indian nuts, although the kernels in the former are more fully developed.

The entire supply which during the triennium ending 1940-41 totalled 73,000 tons is processed into kernels. The quantities used as seed are negligible. The recovery of kernels from Indian nuts averages about 25 per cent. and that from African 26 per cent. On this basis, the total supply of kernels works out to 18,700 tons per annum.

Of the total supply of kernels, nearly 75 per cent. is exported outside India. The exports during the triennium ending 1940-41 averaged 14,200 tons. The trend of exports has been steadily upward even during the War years in spite of serious shipping difficulties. More than 80 per cent. of the total exports generally go to the United States of America, about 6 per cent. to the United Kingdom and 3 per cent. to Canada.

The quantities of cashew kernels consumed in India during the period under consideration averaged 121,000 maunds or 4,500 tons per annum. Due to their high prices, the consumption of cashew kernels is confined mainly to the well-to-do classes in urban areas. The *per capita* consumption in the case of urban tracts works out to nearly 9 tolas per annum.

In Southern India, cashew kernels are mostly used for flavouring sweet dishes and for decorating confectioneries. In the northern parts of the country, however, these are generally used either as such or after mixing with other dried fruits. During recent years, the use of fried and salted kernels has become very popular practically all over the country and there appears to be a large scope for increasing the consumption of cashew kernels in that form.

Chapter II.—Processing, grading and packing.

Cashew nuts.—Cashew nuts are ready for harvesting when the fleshy portion of the peduncles, commonly known as "cashew apple", to which they are attached becomes ripe. Cashew nuts are, however, generally picked from the trees when they are not quite-ripe. The practice affects adversely both the quantity and quality of the produce as the kernels extracted from immature nuts are light and are not fully developed. Sometimes the producers scald the unripe nuts with boiling water with a view to pass them as ripe ones.

After picking, the nuts are separated from swollen peduncles by hand. They are then dried in the sun although in most cases only to a partial extent. As the nuts put on the market are not generally quite dry and as undried nuts do not keep well for more than a few days, they have to be dried again by merchants or factory agents before storing or despatching them to factory centres. The cost of drying at market centres average about 1½ annas per maund. As ultimately all expenses on account of drying have to be borne by producers, it will be in their interest if they sell dried nuts. This will lead to a further saving of 5 to 10 per cent. in the cost of transportation from growers to assembling markets.

As most of the produce put on the market at present is in a mixed form, the premium paid for quality is generally inadequate.

Cashew kernels.—The blanched cashew kernels of commerce are obtained by roasting and shelling the nuts and then peeling the kernels of their outer skin. Roasting makes the nuts brittle and facilitates shelling. It also imparts a special flavour to the kernels. In certain areas, however, cashew nuts are shelled only after drying in the sun.

Cashew nuts may be roasted in (1) open pans, (2) rotary cylinders or (3) oil baths. Until about 1931, the open pan system was more or less universally followed in all parts, although by processing in open pans the oil in the shells is completely lost, the hands of the workers get injured and the pungent smoke given out by the burning nuts has a bad effect on the health of the workers. A large part of the shell oil is also lost in roasting in rotary cylinders. Otherwise this system is quite efficient and hygienic. The cost of roasting in rotary cylinders averages about 1 anna per maund as compared with 1½ annas in the case of open pans. As, however, the capital cost in the case of open pan process is negligible, practically all the factories on the East Coast and in up-country centres which are generally small concerns, work with open pans. The factories on the West Coast mostly use rotary cylinders while two of them work with oil bath—the equipment used being patents of the respective concerns.

The work of shelling cashew nuts and peeling kernels is generally done by women and children. Great care has to be taken that the kernels do not break. To ensure this no wages are paid for kernels broken during shelling while the wages paid for brokens in the case of peeling are only half although it is more difficult to peel brokens than wholes. The percentage of brokens is comparatively larger in the case of African nuts compared with Indian nuts. The percentage recovery of unpeeled kernels on nuts ranges from 28 to 30 and the peels form about 12 per cent. of the weight of kernels.

Cashew kernels are generally sorted out according to their size, colour and brokens. Kernels meant for export are graded according to certain recognised specifications commonly known as American Standards. These grades are based on "counts" or number of kernels per lb. Under American Standards, 'wholes' and 'brokens' are graded separately. The graded kernels are required to be fully developed, ivory white in colour and free from insect damage and black or brown spots.

Cashew kernels meant for consumption within the country are, however, not graded on any recognised basis. Wholes and brokens are mixed in varying proportion according to the demand from different markets.

Kernels meant for export are packed in new tins of 4 gallons capacity while those for internal consumption are generally packed in old kerosene tins or wooden cases. Sometimes gunny bags are also used particularly in the case of brokens. As cashew kernels do not keep well for more than 3 to 4 months, the kernels exported abroad are packed in vacuum with, or without, carbon dioxide. The kernels packed in vacuum keep well for about a year while those in carbon dioxide for about 2 years. The cost of vacuumising averages about 1 anna per tin of 25 lbs. Vacuum packing is not common in the case of kernels sold within the country.

Chapter III.—Prices.

The prices of cashew nuts as also those of cashew kernels are largely determined by the demand from the United States of America—the market which consumes more than 75 per cent. of the world supply of cashew kernels. In that country, the demand as also the prices offered for cashew kernels are influenced to a certain extent by the prices of other nuts including Brazil nuts, peanuts and walnuts. Of late, the prices obtained for cashew shell oil have also been exercising a marked influence on the prices of both nuts and kernels.

The New York prices (c. & f.) of cashew kernels, during the period from 1936-37 to 1938-39, ranged between 70 and 90 shillings per cwt. Due to a general rise in prices owing to War conditions, the average price in 1941-42 rose to 150 shillings. This was also, to a certain extent, due to high ocean freights and packing charges.

The prices of cashew kernels in the important export markets of India during the three pre-War years varied from Rs. 26-8-0 to Rs. 30-8-0 per maund. The average for 1941-42 was Rs. 48 per maund. As is to be expected, the prices of cashew nuts generally follow the same course as those of kernels.

Although the general level of prices in different inland markets is governed mainly by the prices obtained for exports, the course of prices in particular markets is considerably influenced by local conditions. For example the prices at Panruti on the Eastern Coast were higher than those at Bombay in 1939-40 while reverse was the case in 1937-38, 1938-39 and 1940-41.

As cashew nut factories work mostly on imported nuts in the off-season and as the production of kernels is spread more or less evenly all over the year, the seasonal fluctuations in the prices of both nuts and kernels are generally small.

Although cashew nuts are generally marketed in an ungraded form, the produce from certain areas is preferred and sells at a premium which may go up to 5 or 6 per cent. above the price for average quality. The African nuts which are smaller in size than the local nuts sell at a discount of about 10 per cent. The prices of peeled kernels are generally 20 to 25 per cent. higher than those of unpeeled ones. The differences in the prices of whole kernels of different sizes and brokens are also very marked. In December 1941, when the price of wholes of 210 count was quoted at Quilon at 33 cents per lb., that of splits was 24 cents and of large pieces 22½ cents per lb.

Practically no information on the production, stocks or prices of cashew nuts or kernels is reported at present. Some rough estimates of production are prepared by a few large firms but they are not published for general information.

Chapter IV.—Assembling and distribution.

A major portion of the cashew nut crop in India is assembled from farms by itinerant merchants. These dealers quite often employ a number of local boys to assist them in the house to house collection of nuts. A small quantity of nuts is also sold by producers in local *shandys* or periodical markets.

The quantity of cashew nuts taken by producers direct to wholesale markets or processing factories does not generally exceed 6 or 7 per cent. of the total produce. The fact is that the quantity which an average producer has to sell at a time does not ordinarily exceed a few lbs. and as such it is not considered worthwhile to take the same to distant markets or factory centres.

By selling to itinerant dealers in villages, the producer may lose from 10 to 15 per cent. of the value of his produce. This could be saved if the producers arranged to market their produce on a co-operative basis. A further saving of 5 to 6 per cent. can be effected by selling direct to processing factories instead of through merchants in wholesale markets.

In wholesale markets, cashew nuts are handled by the same merchants who deal in other agricultural commodities. Some of them simply work as commission agents to processing factories. The merchandising charges which the sellers have to pay in such markets generally range from Rs. 2-4-0 to Rs. 5-9-0 per cent. on value. The buyers also have to pay commission and brokerage which amounts to another 2 per cent.

In recent years, a number of factories have started their own buying depots in important assembling markets and it is estimated that about half of their requirements are now purchased by factories through their own establishments.

The imports of cashew nuts into India are arranged mainly by Bombay firms, most of whom have their own branches at East African ports. As the steamers plying between India and Africa do not generally call at most of those ports where processing factories are situated, the nuts are first booked to Bombay.

A large quantity of African nuts is purchased by Indian importers on forward delivery basis in August-September and shipments of the new crop generally start towards the end of October. Large processing factories in India also purchase their requirements on forward delivery basis and, in their turn, make forward sales of kernels particularly to buyers in the United States of America.

Distribution of cashew kernels for inland consumption is effected by wholesale merchants who also deal in other dried fruits, spices, etc. These firms may obtain their requirements direct from processing factories or through their agents. A major portion of the cashew kernels processed by factories on the East Coast is distributed direct to wholesale markets. The production from factories on the West Coast is distributed largely through Bombay merchants. More than 85 per cent. of the production on the West Coast is, however, exported to foreign countries.

Distribution to foreign countries is carried out chiefly by the processing factories themselves. Most of the large factories have their own representatives or commission agents in foreign markets. A certain amount of export business is also transacted through merchants and commission agents particularly those at Bombay and Madras.

As most of the processing factories are situated at small ports not touched by large sea-going vessels, a very large proportion of the export trade passes through the port of Cochin. Small quantities are also shipped direct from the ports of Bombay, Mangalore, Calicut, Coconada and Madras.

Chapter V.—By-products.

The main by-products of the cashew industry are (1) apples, (2) shells, (3) shell oil and (4) peels. Excepting shell oil, the other products are only partially utilized at present.

Cashew apples.—The production of cashew apples in India averages about 5,500,000 maunds per annum. They can be used both as a vegetable and as a fruit. Their juice is particularly rich in sugars and can be boiled into syrup or used for preparing liquor or vinegar. The consumption of cashew apples in this country is, however, confined to producing areas and may not exceed 15 per cent. of the total production. One reason why cashew apples are not used to a greater extent for edible purposes than at present, is that a large part of the crop is harvested while the apples are not quite ripe and as such they taste bitter. On account of their poor keeping quality, they cannot be conveniently transported to distant markets. The quantity used for distilling in India is negligible.

Shells.—The shells or rinds of cashew nuts from 70 to 72 per cent. of the weight of nuts. The actual quantity of shells obtained may vary from 60 to 65 per cent. since a part of the oil in shells is burnt or extracted during the roasting process. These shells are generally used as fuel by the processing factories. Roasted shells contain a good proportion of oil which can be extracted by proper treatment.

Shell oil.—The oil content of shells is estimated to range from 15 to 30 per cent. by weight. In the case of African nuts it varies from 15 to 20 per cent. while in the case of Indian nuts from 25 to 30 per cent. The actual recover of oil ranges from less than 2 per cent. in the case of nuts roasted in rotary cylinders to about 15 per cent. in the case of nuts processed in oil baths. The recovery of oil obtained by smouldering the shells in iron drums, as is done in the Panruti area, averages about 9 per cent.

The total production of shell oil in India in 1942 was estimated at 11,500 tons. The declaration of the Government in the United States of America, in June 1942, that only such cashew kernels can be exported to that country from the shells of which the necessary oil has been extracted, has given a great impetus to the production of shell oil. The order was intended to ensure a regular supply of this oil.

In India, shell oil is used mostly by fishermen as a preservative for their boats and nets. It also serves as a good protection against damage by white ants to furniture, books, etc. The use of shell oil for industrial purposes has been developed only during the past 6 or 7 years as a result of intensive research carried out particularly in the United States of America. In that country, shell oil is now used in the various industries concerned with the preparation of different kinds of varnishes, elastics, insulating coatings, inks, etc. and very recently in munitions. The total exports of oil during the period 1939-40 to 1941-42 averaged 1,073 tons, the figure for 1942-43 being 1,910 tons.

Peels.—Peels generally form about 12 per cent. of the weight of kernels. The total quantity of peels obtained in a year amount to about 75,000 maunds. A major portion of this quantity is used as fuel. It, however, could be used as a food for poultry.

CONCLUSIONS AND RECOMMENDATIONS.

(1) Need for encouraging the production of cashew nuts.

Due to the rapid increase in the export trade in cashew kernels and also in shell oil, the returns from cashew plantations have considerably increased. Although a large number of new cashew plantations have been established during recent years in the varions producing areas, practically nothing has been done to introduce this tree in new tracts excepting the forest area in Mysore. The fact that cashews can be grown under suitable conditions on waste lands and on poor soils unsuitable for taking other crops does not seem to be fully realised. Production of cashew nuts under suitable conditions can be considerably increased without affecting the production of any other crop and the cashew tree can be made a lucrative source of subsidiary income to the cultivator. At present, India has to import a large quantity every year from outside for meeting the steadily growing demand for kernels. It is desirable that efforts should be made to encourage the production of cashew nuts in areas suitable for its gorwth.

(2) Marketing of cashew nuts on co-operative basis.

A large proportion of the cashew nut crop is collected from growers by itinerant merchants. By selling to itinerant merchants, the producer is estimated to lose from 10 to 15 per cent. of the value of his produce. As the quantity which an average cultivator has to sell at a particular time is generally small, it is not found worthwhile to take the same to distant wholesale markets or factory centres. It seems that if the cashew nuts from a number of growers are pooled together by producers' co-operative societies and marketed direct to factories, the farmers will be able to save not only the margin of the itinerant dealers but also a good proportion of the merchandising charges which are incurred at present while selling and buying through merchants in wholesale markets.

Co-operative societies of the type proposed above can also arrange for the drying of cashew nuts and their sorting out into suitable grades before marketing the same. This will enable the cultivator to save to himself the costs of drying and a portion of the transportation charges and also help him in securing a suitable premium for the quality of his produce.

(3) Improvement in methods of roasting.

A very large quantity of cashew nuts is roasted in open pans. In this process, the entire quantity of the oil contained in shells is burnt away. The recovery of shell oil in the rotary cylinder process amounts to about 2 per cent. as against nearly 15 per cent. recovered by roasting in oil baths. Roasting in oil baths is, however, confined at present to only two concerns—the machinery used being the patents of the respective firms. Even in this process only about 60 to 70 per cent. of the oil contained in the shells is recovered. In view of the great importance in which shell oil is now held, it is essential that the process adopted for roasting cashew nuts should be such as would combine in itself the double advantage of good roasting with a maximum extraction of shell oil. It is suggested that experiments be arranged with a view to evolving suitable machinery for the purpose. There is also a need for devising suitable machinery for extracting oil from the shells of nuts roasted by any one of the processes in vogue at present.

(4) Development and consumption of cashew kernels.

Although the consumption of cashew kernels has increased nearly 10 times during the past 15 years, the total quantity used at present is still small and there appears to be room for developing it further. At present, the consumption of cashew kernels in India averages only 1 tola (3/8 ounce) per head per annum. In the case of other countries, cashew kernels are used in appreciable quantities only in the United States of America and to a certain extent in the United Kingdom, although the consumption of this product is steadily increasing in many other countries also. In India, the distribution of salted kernels by Coffee Houses opened by the Indian Coffee Cess Committee in different parts of the country has resulted in popularising salted kernels to a great extent.

(5) Grading and packing.

Although cashew kernel meant for export are properly graded and packed in vacuum, the kernels sold for consumption in home markets are generally in a mixed form and are packed in ordinary tins. The result is that they soon lose their attractive flavour and are attacked by insects. Consequently the demand suffers. Vacuum packing should also be adopted in the case of kernels meant for the home markets particularly in view of the fact that the cost of packing in vacuum forms only a negligible proportion of the total value of the kernels concerned. Adoption of suitable grade-standards is also expected to go a long way in helping the development of the inland trade on right lines.

(6) Better utilization of cashew apples.

Cashew apples can be used both as a fruit and a vegetable. At present, however, only about 15 per cent. of the total production of apples in India is estimated to be consumed for edible purposes. One reason why cashew apples are not used to a greater extent than at present is that a large part of the crop is harvested when the apples are not quite ripe and such apples taste bitter. The practice of picking immature or semi-mature cashew nuts affects the quality of both the nuts and apples and needs to be improved. Juice of cashew apples which is rich in sugars can be boiled into syrup or used for distilling. Cashew apples are also utilized in certain parts of the world for making jams and vinegar. The use of cashew apples in India for these various purposes also deserves consideration.

(7) Marketing intelligence.

Practically no information regarding the production of cashew nuts or cashew kernels or on stocks or prices of these products is published at present. Estimates of production of cashew nuts are prepared by some large firms but they are not reported for general information. As a large proportion of cashew nuts is collected from stray trees, it may be difficult for the agricultural, revenue or any other Goverment department to prepare the necessary estimates. The trade associations interested in cashew nuts can, however, do a lot in this connection. The Southern India Cashew nuts Manufacturers Association, Quilon, the members of which are reported to handle more than half of the total produce, seems to be eminently suited for taking up this work. The dissemination of reliable information particularly on production and prices is expected to encourage direct trading between distant markets to the mutual benefit of both the producer and the consumer.

सत्यमेव जयते

APPENDIX I.

Imports of cashew nuts into British India and Indian States.

—	Quantity in thousand maunds.					Value in thousand rupees.				
	1937-38.	1938-39.	1939-40.	1940-41.	1941-42.	1937-38.	1938-39.	1939-40.	1940-41.	1941-42.
British Empire—										
Union of South Africa	82	..	31	1	..	4,01	..	1,54	4	*n*
Zanzibar and Pemba	2	1	1	*n*	2	9	7	2	1	19
Kenya Colony	16	5	9	12	2	79	22	41	67	9
Tanganyika territory	1	4	2	9	6	4	17	14	56	83
Other British possessions	*n*	*n*	*n*	*n*	*n*	*n*	*n*	*n*	*n*	4
Total	1,01	10	43	22	10	4,93	46	2,11	1,28	1,15
Foreign Countries—										
Portuguese East Africa	7,81	8,37	5,17	8,40	7,48	34,94	38,06	26,05	49,08	56,68
Other foreign countries	1	*n*	12	*n*	*n*	3	*n*	73	10	*n*
Total	7,82	8,37	5,29	8,40	7,48	34,97	38,06	26,78	49,18	56,68
Grand Total	8,83	8,47	5,72	8,62	7,58	39,90	38,52	28,89	50,46	57,83
Share of Bengal	..	..	..	..	..	..	..	..	..	*n*
„ Bombay	1,14	64	31	49	93	5,45	2,78	1,65	3,05	8,16
„ Sind	..	*n*	..	..	..	..	3	..	..	..
„ Madras	3,70	2,77	1,64	1,41	3,98	17,85	13,36	7,74	8,15	28,88
„ Travancore	3,99	5,06	3,77	6,72	2,67	16,60	22,35	19,50	39,26	20,79

n.=negligible.

Source.—(*i*).—Annual statement of the Sea-borne Trade of British India.

(*ii*).—Trade Statistics relating to the Maritime States in Kathiawar and States of Travancore.

APPENDIX II.

Monthly imports of cashew nuts and exports of cashew kernels into and from British India and Indian States.

(Quantities are in thousand maunds and figures in brackets indicate percentages to annual imports.)

Months.	Imports of cashew nuts.						Exports of cashew kernels.					
	1937-38.	1938-39.	1939-40.	1940-41.	1941-42.	Average.	1937-38.	1938-39.	1939-40.	1940-41.	1941-42.	Average.
April	206 (23·3)	85 (10·0)	35 (6·1)	162 (18·8)	155 (20·4)	128 (16·4)	28 (7·6)	22 (5·5)	18 (5·1)	43 (10·4)	20 (3·8)	26 (6·3)
May	102 (11·6)	115 (13·6)	49 (8·5)	65 (7·5)	36 (4·8)	74 (9·3)	29 (7·7)	38 (9·6)	23 (6·5)	9 (2·2)	95 (17·4)	39 (9·3)
June	124 (14·0)	46 (5·4)	11 (2·0)	7 (0·9)	2 (0·3)	38 (4·8)	26 (6·9)	30 (7·7)	51 (14·1)	20 (4·8)	7 (1·3)	27 (6·4)
July	21 (2·4)	31 (3·7)	15 (2·6)	72 (8·3)	1 (0·1)	28 (3·6)	20 (5·4)	23 (5·9)	46 (12·7)	52 (12·7)	44 (8·1)	37 (8·9)
August	40 (4·8)	8 (1·0)	16 (2·8)	11 (1·2)	176 (23·1)	50 (6·4)	27 (7·1)	31 (7·9)	45 (12·4)	48 (11·7)	78 (14·3)	46 (10·9)
September	30 (3·3)	9 (1·1)	25 (4·4)	17 (2·0)	61 (8·0)	28 (3·7)	56 (15·1)	52 (13·3)	20 (5·5)	57 (13·9)	54 (10·1)	48 (11·5)
October	45 (5·1)	20 (2·3)	35 (6·1)	30 (3·5)	2 (0·3)	26 (3·3)	40 (10·8)	41 (10·4)	59 (16·6)	52 (12·6)	92 (16·9)	57 (13·7)
November	10 (1·1)	31 (3·6)	11 (1·9)	— —	87 (11·5)	28 (3·5)	46 (12·4)	33 (8·3)	18 (5·1)	45 (11·1)	37 (6·9)	36 (8·7)
December	60 (6·7)	83 (9·8)	59 (10·3)	3 (0·4)	157 (20·7)	72 (9·2)	36 (9·7)	26 (6·7)	23 (6·3)	24 (5·9)	11 (1·9)	24 (5·8)
January	109 (12·4)	172 (20·3)	63 (10·9)	199 (23·0)	40 (5·3)	117 (14·9)	24 (6·4)	29 (7·4)	24 (6·8)	8 (1·9)	24 (4·4)	22 (5·3)
February	44 (4·9)	87 (10·2)	221 (38·6)	166 (19·2)	16 (2·1)	107 (13·6)	16 (4·1)	26 (6·7)	12 (3·4)	30 (7·3)	13 (2·5)	19 (4·7)
March	92 (10·4)	161 (19·0)	33 (5·8)	131 (15·2)	26 (3·4)	89. (11·3)	26 (6·8)	42 (10·6)	20 (5·5)	22 (5·5)	67 (12·4)	35 (8·5)
Total quantity in thousand maunds.	8,83	8,48	5,73	8,63	7,59	7,85	3,74	3,93	3,59	4,10	5,42	4,16

APPENDIX III.

Exports of cashew kernels from British India and Indian States.

—	Quantity in thousand maunds.					Value in thousand rupees.				
	1937-38.	1938-39.	1939-40.	1940-41.	1941-42.	1937-38.	1938-39.	1939-40.	1940-41.	1941-42.
British Empire—										
United Kingdom	17	21	33	39	71	5,92	7,64	12,23	14,15	12,93
Canada	8	11	15	13	28	3,28	3,92	5,86	5,61	14,01
South Africa	2	3	3	3	8	83	92	1,10	1,24	2,98
Commonwealth of Australia	2	3	5	6	8	99	1,18	1,93	2,31	3,31
New Zealand	1	1	1	1	1	53	36	32	35	31
Burma	1	*n*	1	1	1	23	14	24	18	36
Straits Settlements	1	*n*	*n*	*n*	*n*	15	13	14	14	11
Other possessions	*n*	1	*n*	*n*	*n*	24	19	7	8	6
Total	32	40	58	63	117	12,17	14,48	21,89	24,06	34,07
Foreign Countries—										
United States of America	317	322	284	345	425	1,15,42	1,16,53	99,91	1,40,57	1,75,27
France	9	11	4	..	..	1,50	2,48	1,35	..	..
Netherlands	9	8	6	2	..	3,31	2,84	2,27	56	..
Belgium	4	9	4	..	..	1,25	2,35	1,23	..	..
Other countries	2	2	3	*n*	*n*	70	74	90	20	*n*
Total	341	352	301	347	425	1,22,18	1,24,94	1,05,66	1,41,33	1,75,27
Grand Total	373	392	359	410	542	1,34,35	1,39,42	1,27,55	1,65,39	2,09,34
Share of Bengal	..	..	..	..	*n*	..	..	..	..	2
" Bombay	23	32	14	28	29	8,26	9,50	4,12	9,90	13,80
" Madras	324	335	336	371	513	1,20,65	1,19,61	1,19,53	1,50,62	1,95,50
" Travancore	26	25	9	11	*n*	5,44	10,31	3,90	4,87	2

n=negligible.

Source.—(*i*).—Annual statement of the Sea-Borne Trade of British India.

(*ii*).—Trade Statistics relating to the Maritime States in Kathiawar and the States of Travancore.

APPENDIX IV.

Analytical results of certain dried nuts and kerne's.

Name.	Botanical name.	Moisture.	Protein.	Fat (Ether Extractives).	Mineral matter.	Fibre.	Carbohydrate.	Calcium (Ca).	Phosphorus (P).	Iron (fe) mgs.	Calorific value per 100 gms.	Carotene (International Vitamin A) Units per 100 gms.	Vitamin B_1 (International Units) per 100 gms.	Vitamin B_2.	Vitamin C mgs. per 100 gms.
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.					
Cashew nut . . .	*Anacardium Occidentale.*	5·89	21·19	46·93	2·43	1·27	22·29	0·053	0·449	4·95	596·3	100	*	*	..
Almond	*Amygdalus communis.*	5·23	20·75	58·92	2·90	1·70	10·50	0·225	0·492	3·47	655·3	..	80	..	..
Pistachio nut . . .	*Pistaciavera*	5·58	19·81	53·51	2·75	2·10	16·25	0·136	0·431	13·70	625·8	..	..	..	..
Walnut	*Juglans regia.*	4·53	15 64	64·49	1·84	2 60	10·90	0·095	0·384	4·76	686·6	..	150	..	..
Groundnut . . .	*Arachis hypogaca.*	7 92	26·72	40·13	1·87	3·07	20·29	0·048	0·392	1·56	549·2	63	300	*	..
Groundnut roasted .	*Arachis hypogaca.*	4·04	31·54	39·76	2·28	3·07	19 31	0·045	0·435	0· 9	561·2	..	..	..	..

Source :—Health Bulletin issued by the D. G., I. M. S. in India, 1941.

* Traces.

APPENDIX V.

Average monthly arrivals and despatches of cashew kernels by rail.

(Quantities are in maunds and figures in brackets indicate percentages on annual totals.)

Months.	Despatches from producing centres.			Arrivals in consuming centres.				
				South India.		Northern India.		
	Palasa (1938-39 to 1940-41).	Vetapalam (1938-39 to 1940-41).	Panruti (1939-40 to 1941-42).	Hyderabad and Secunderabad (1938-39 to 1940-41).	Mysore (Bangalore City and Cantonment) (1940-41).	Punjab. Average 4 markets* (1937-38 to 1939-40).	Delhi (1940-41 to 1941-42).	Central Provinces, Average 4 markets† (1939 to 1941).
April	100 (1·2)	218 (3·4)	1,251 (10·0)	31 (18·3)	194 (9·8)	*nil*	*nil*	35 (2·4)
May	300 (3 6)	205 (3·2)	1,102 (8·8)	5 (3·0)	194 (9·8)	*nil*	*nil*	136 (9·3)
June	314 (3·7)	632 (9·8)	1,339 (10·7)	25 (14·8)	136 (6·9)	*nil*	*nil*	57 (3·9)
July	201 (2·4)	1,384 (21·5)	1,131 (9·0)	18 (10·6)	183 (9·3)	*nil*	*nil*	35 (2·4)
ugust	423 (5·0)	645 (10·0)	1,555 (12·4)	3 (1·8)	181 (9·1)	1 (0·3)	*nil*	77 (5·3)
eptember	813 (9·7)	765 (11·9)	1,225 (9·8)	3 (1·8)	193 (9·7)	10 (3·4)	14 (1·0)	226 (15·5)
ctober	980 (11·7)	623 (9·7)	1,057 (8·4)	3 (1·8)	126 (6·4)	29 (9·8)	303 (22·2)	115 (7·9)
ovember	2,005 (23·8)	639 (9·9)	668 (5·3)	22 (13·0)	91 (4·5)	99 (33·3)	519 (38·0)	214 (14·6)
ecember	1,953 (23·2)	459 (7·1)	923 (7·3)	30 (17·7)	213 (10·8)	87 (29·3)	401 (29·4)	338 (23·1)
nuary	732 (8·7)	338 (5·3)	587 (4·7)	14 (8·3)	149 (7·5)	51 (17·2)	78 (5·7)	108 (7·4)
bruary	475 (5·7)	357 (5·5)	846 (6·8)	9 (5·3)	176 (8·9)	16 (5·4)	41 (3·0)	81 (5·5)
rch	111 (1·3)	170 (2·7)	846 (6·8)	6 (3·6)	145 (7·3)	4 (1·3)	10 (0·7)	40 (2·7)
Total quantity in standard maunds	8,407	6,435	12,530	169	1,981	297	1,366	1,462

* Lahore, Rawalpindi, Lyallpur and Amritsar.

† Nagpur, Akola, Jubbulpore and Khandwa.

APPENDIX VI.

List of certain important concerns processing cashew nuts in India in 1941-42.

Province and District.	Name of proprietors.	Location of factory.*	Average annual turnover (in maunds of nuts handled).
Madras.			
Vizagapatam	A. Subba Rao and Co.	Palasa	4,000
Do.	Bharat Bhagyalakshmi and Co.	Do.	10,000
Do.	Gajanama Manufacturing Co.	Do.	6,000
Do.	K. Sambasivudu and Co.	Do.	4,000
Do.	Sri Krishna Manufacturing Co.	Do.	16,000
Do.	Sri Vijayalakshmi Co.	Do.	5,000
Do.	Malla Kondalarao and Subudhi	Sompeta	*Na*
East Godavari	Northern Circars Industries	Rajahmundry	*Na*
West Godavari	Akula Mahalakshmi Sons	Mori (Near Narsapur)	8,000
Do.	Cashew Export Trading Co.	Do.	*Na*
Do.	Mupparty Mahalakshmir Brothers	Do.	5,000
Do.	Somana and Co. Addala Somanna	Do.	4,000
Guntur	Athmakuri Subba Rao and Sons	Vetapalam	2,800
Do.	Chunduru Srinivasulu and Sons	Do.	1,600
Do.	Koduri Sambasivudu and Co.	Do.	3,100
Do.	Koduri Satyanarayanau and Co.	Do.	2,400
Do.	Kothamasu Venkatasubbarayudu and Sons.	Do.	1,200
Do.	Kotha Venkatasubbarayadu and Co.	Do.	1,200
Do.	Vootukuri Adiseshaiah	Do.	4,200
Do.	Vootukuri Suryanarayana Javvaji Chini and Co.	Do.	3,000
Do.	Vootukuri Kotiswamy and Sons	Do.	4,600
Nellore	Sankara Stores	Nellore	3,200
South Arcot†	Arogyasami Padayachi	Panikuppam (near Panruti).	7,500
Coimbatore	T. Stanes and Co.	Coimbatore	1,500
Malabar	Messrs. Peirce, Leslie and Co., Ltd.	Calicut	46,500
South Kanara	Mallaya Naik and Co.	Mangalore	69,000
Do.	Mizar Krishna Annappa Pai and Co.	Do.	86,000
Do.	Messrs. Peirce, Leslie and Co., Ltd. (3)	Do.	190,000
Bombay.			
Ratnagiri	Mr. Anant Gopal Shirodkar	Vengurla area	6,800
Do.	Mr. Laxman Mahadeoshet Teli	Do.	5,100
Do.	Mr. Mahadeo Bapu Prabhuzantye	Do.	20,400
Do.	Mr. Shripad Radha Krishna Zantye	Do.	4,200
Do.	Mr. Narayan Ganesh Prabhoo Zantye and Bros.	Malvan area	17,000
Do.	Mr. Raghunath Ganesh Kamat	Do.	17,000
Travancore.			
Trivandrum	T. N. Motha and Sons	Anad, Nedumangad	*Na*
Quilon	A. Abdul Kadar Musaliar and Sons (2)	Quilon area	20,000
Do.	Aspinwall and Co. (Trav.) Ltd.	Do.	10,000
Do.	Associated Cashew Exporters	Panavelil Kottarkara	25,000

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*Figures in brackets indicate the number of processing factories run by a particular firm in the area concerned.

†In the Panruti area of this district, processing of cashew nuts is largely carried out as a cottage industry.

Na=Not available.

APPENDIX VI—*contd.*

Province and District.	Name of proprietors.	Location of factory.*	Average annual turnover (in maunds of nuts handled).
Travancore—contd.			
Quilon	A. Thangal Kunju Musaliar & Sons (7)	Quilon area	240,000
Do.	Danalaxmi Vilas Cashew Co. (5)	Do.	135,000
Do.	John M. Casey	Do.	25,000
Do.	K. Gangadharan, Cashew-Exporter (3)	Do.	15,000
Do.	K. Kunjukrishna Pillai and Bros.	Karunggapally	*Na*
Do.	K. Mytheen Kunju (5)	Quilon area	130,000
Do.	K. S. Narayanaswamy and Co. (4)	Do.	47,500
Do.	M. P. Govindan and Sons (4)	Do.	72,500
Do.	M. P. Govindan Brothers	Do.	30,000
Do.	M. P. Kesavan and Sons (3)	Do.	37,500
Do.	Padma Cashew nut factory	Do.	20,000
Do.	Pattathanam Cashew Co.	Do.	10,000
Do.	Peirce, Leslie and Co., Ltd.	Do.	190,000
Do.	Pioneer Produce Co.	Do.	6,200
Do.	Quilon Cashew Export Corporation (6)	Ajoor, Chadayamangalam	127,000
Do.	R. Govinda Pillai and Sons	Quilon area	12,500
Do.	Shanmukha Vilas Cashew nut factory (6)	Do.	120,000
Do.	Shahal Kamal and Co.	Do.	17,500
Do.	S. N. Srinivas and Brothers	Do.	22,500
Do.	S. R. A. Cashew nut Co. (2)	Do.	5,000
Do.	The India Nut Co., Ltd. (4)	Do.	110,000
Alleppey	C. George Peter of Quilon	Alleppey	5,500
Do.	Darragh Smail and Co., Ltd.	Do.	17,500
Cochin.			
Cochin	M. Peres	Trichur	35,000
Alwaye	Mackir Pillay and Sons, Ltd.	Alwaye	22,500

*Figures in brackets indicate the number of processing factories run by a particular firm in the area concerned.

Na=Not available.

सत्यमेव जयते

APPENDIX VII.

Average monthly prices of whole kernels (300/320) c. & f., New York, as quoted at Mangalore.

(Shillings per cwt.)

Months.	1936.	1937.	1938.	1939.	1940.	1941.	1942.
anuary	—	86	65	—	—	103	162
ebruary	—	84	63	—	86	102	162
arch	—	—	70	86	91	117	162
pril	89	82	77	86	93	123	162
ay	89	82	82	—	96	127	156
une	91	83	—	87	94	137	156
ly	91	—	87	—	—	148	162
ugust	—	—	93	83	—	148	168
ptember	—	—	97	—	102	154	161
tober	—	—	—	—	102	159	161
ovember	—	70	88	—	102	159	—
cember	—	—	88	92	103	159	—

APPENDIX VIII.

Average monthly wholesale prices (per maund of 82 2/7 lb.) of cashew nuts in certain selected markets in India.

—	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.
1936																								
Mangalore	..		..		..		..		..		..		..		..		..		..		..		..	
Trichur	..		..		..		..		..		..		..		..		..		..		..		..	
Vengurla	..		..		..		..		..		..		..		..		..		..		..		..	
Panruti	..		..		..		5	2	5	7	5	11	..		..		5	4	6	0	..		..	
Palasa	5	2	5	2	5	2	5	2	5	2	3	14	3	14	3	14	3	14	3	14	3	14	5	2
1937																								
Mangalore	..		..		5	6	4	11	4	11	5	3	5	2	4	11	4	5	3	10	3	1	3	1
Trichur	..		5	1	4	15	4	11	4	13	4	12	..		..		..		..		..		..	
Vengurla	..		..		..		..		..		..		..		..		..		...		..		..	
Panruti	6	4	6	8	6	12	5	8	5	11	5	13	5	13	6	0	..		..		..		5	6
Palasa	6	6	6	6	4	12	4	4	4	4	4	6	4	8	4	10	4	11	4	12	4	1	..	
1938																								
Mangalore	2	14	3	4	3	9	4	14	5	0	5	3	5	1	5	4	5	8	4	11	4	8	4	11
Trichur	..		3	6	3	11	4	5	4	13	5	2	..		..		..		..		..		..	
Vengurla	..		..		..		..		..		..		..		..		..		..		..		..	
Panruti	3	15	4	12	4	8	3	12	3	11	4	0	4	0	4	0	4	0	4	5	5	4	5	7
Palasa	..		4	4	4	6	2	14	3	9	3	0	4	0	3	12	4	8	4	8	3	12	..	
1939																								
Mangalore	4	13	4	11	4	8	4	9	4	9	4	13	4	9	4	7	4	4	5	3	4	11	4	5
Trichur	4	14	5	1	4	8	4	3	4	5	4	8	..		..		..		..		..		..	
Vengurla	..		..		4	14	5	0	5	0	4	15	5	1	5	2	5	1	5	8	5	12	5	14
Panruti	6	4	5	13	5	10	5	12	4	14	5	8	5	10	6	2	6	4	7	0	7	8	7	8
Palasa	5	4	5	4	4	10	4	9	4	6	4	4	4	4	4	2	4	3	5	9	5	10	6	6
1940																								
Mangalore	4	5	4	6	5	2	5	6	4	15	4	4	3	9	4	12	4	13	4	14	4	11	4	10
Trichur	..		5	6	5	11	5	3	3	15	3	4	..		..		..		..		..		..	
Vengurla	..		..		5	2	5	11	5	11	5	11	..		5	2	5	2	5	14	5	15	6	1
Panruti	7	10	7	12	7	12	5	4	5	2	4	3	4	9	4	15	5	9	5	13	5	14	6	2
Palasa	4	12	6	1	5	10	5	9	5	5	4	10	4	8	4	8	5	1	5	8	6	4	6	1
1941																								
Mangalore	4	11	5	1	5	4	6	2	6	4	6	8	7	13	7	13	7	12	7	12	7	12	7	12
Trichur	..		5	4	4	13	5	13	6	2	6	4	..		..		..		..		..		..	
Vengurla	..		..		5	11	6	14	7	4	7	3	7	4	7	11	..		..		10	1	..	
Panruti	6	0	5	13	5	0	5	5	5	9	5	8	7	2	7	4	8	8	9	7	10	12	11	10
Palasa	6	1	6	4	4	9	4	10	4	10	4	9	5	10	7	1	7	1	8	4	8	9	9	8
1942																								
Mangalore	..		5	3	5	8	5	8	6	0	6	10	7	13	6	14	6	14	7	15	7	2	7	13
Trichur	..		..		4	13	5	5	5	13	6	7	..		..		..		..		..		..	
Vengurla	..		..		..		..		..		..		..		..		..		..		..		..	
Panruti	10	5	8	3	6	9	5	0	5	0	5	8	5	10	5	10	5	10	6	0	6	0	6	0
Palasa	7	10	7	11	4	8	4	6	4	5	4	11	5	2	6	6	6	6	6	6	7	11	7	8

APPENDIX IX.

Average monthly wholesale prices (per maund of 82 2/7 lb.) of cashew kernels in certain selected markets in India.

—	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Average.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1936													
Bombay . . .	..	..	..	..	..	..	..	..	..	..	..	..	..
Panruti . . .	..	..	..	26 4	25 0	24 10	25 13	29 8	28 5	27 8	29 2	33 3	27 11
Palasa	..	..	..	..	..	..	..	..	..	..	..	..	..
Nagpur . . .	40 0	40 0	40 0	40 0	38 0	36 0	36 0	34 8	34 8	33 0	32 0	32 0	36 5
Delhi	..	..	..	..	..	..	..	..	..	37 1	38 1	39 0	38 1
1937													
Bombay . . .	..	..	..	..	..	..	..	..	..	..	26 7	..	..
Panruti . . .	29 8	27 8	27 11	24 10	23 13	26 10	26 4	26 7	28 5	26 10	26 10	26 7	26 11
Palasa	..	..	..	..	..	..	..	31 0	32 0	32 0	32 0	30 0	..
Nagpur . . .	33 0	32 0	32 0	30 0	30 0	30 0	30 0	31 8	31 8	32 0	32 0	30 0	31 3
Delhi	31 4	31 4	29 4	..	..	..	..	..	..	35 2	33 3	33 3	32 3
1938													
Bombay . . .	26 4	25 7	26 3	26 7	26 13	26 13	27 2	27 10	28 1	28 0	28 2	27 10	27 1
Panruti . . .	25 0	19 4	17 13	18 4	16 3	18 11	17 13	18 4	18 14	20 1	23 13	24 10	19 14
Palasa	27 0	26 0	26 0	25 12	25 8	..	26 0	..	33 0	31 0	31 0	31 0	28 4
Nagpur . . .	29 0	28 0	28 0	28 0	28 0	25 0	24 0	24 0	30 0	30 0	32 0	33 0	28 4
Delhi	30 4	29 4	29 4	..	..	..	..	..	..	35 12	35 2	37 1	32 12
1939													
Bombay . . .	28 0	27 12	27 14	27 10	26 15	26 3	26 4	27 6	27 7	27 13	28 6	29 6	27 9
Panruti . . .	27 14	27 8	26 4	25 7	25 10	23 13	24 3	26 14	27 4	28 11	29 8	32 13	27 2
Palasa	33 0	35 0	35 0	..	..	..	..	29 8	30 0	36 0	36 0	38 0	..
Nagpur . . .	34 8	37 4	37 8	37 0	36 8	36 0	32 0	32 0	34 0	34 4	35 0	36 0	35 11
Delhi	39 0	29 4	29 4	..	..	..	..	..	..	38 1	40 0	44 11	..
1940													
Bombay . . .	29 8	28 12	28 14	28 0	28 4	27 15	27 9	27 9	27 12	28 5	30 0	30 9	28 9
Panruti . . .	34 1	31 1	33 10	22 6	22 14	22 15	19 13	23 3	24 0	26 11	27 11	25 1	26 6
Palasa	32 0	33 8	..	..	..	34 0	34 0	33 5	32 0	34 0	35 6	36 0	33 2
Nagpur . . .	37 0	37 0	37 0	36 8	35 0	34 8	34 0	33 0	34 0	34 12	35 0	38 0	35 8
Delhi	43 14	44 14	45 14	..	..	..	..	..	..	42 15	40 15	40 15	..
1941													
Bombay . . .	30 13	30 8	29 14	30 1	29 14	30 14	31 4	30 14	..	..	..	..	..
Panruti . . .	26 12	26 4	23 13	26 7	27 3	26 13	31 12	34 15	42 5	47 0	44 4	49 10	..
Palasa	34 0	..	32 0	32 0	32 0	..	..	41 0	40 0	45 0	46 0	48 0	..
Nagpur . . .	39 0	38 8	37 8	37 0	34 0	33 8	36 0	38 8	40 0	40 0	50 0	54 0	39 13
Delhi	41 0	34 2	35 2	..	..	..	..	..	53 11	55 2	58 9	59 13	..
1942													
Bombay . . .	..	..	..	..	..	..	..	..	..	..	..	..	..
Panruti . . .	49 13	50 1	44 3	27 11	26 1	25 1	26 8	26 8	27 9	29 6	29 6	29 6	..
Palasa	38 7	38 7	38 7	40 0	32 0	33 0	34 5	34 5	34 5	34 5	34 5	34 5	..
Nagpur . . .	54 0	58 0	58 0	50 0	46 0	46 0	42 0	42 0	48 0	46 0	64 0	60 0	51 8
Delhi	68 5	68 5	68 5	..	..	..	..	..	..	..	..	..	..

APPENDIX X.

List of certain important assembling markets for cashew nuts.

Province and District.	Name of markets.	Estimated quantities of nuts handled annually. (Maunds.)	Important processing centres to which nuts are usually despatched.
Madras.			
Vizagapatam	Palasa	50,000	Local factories and Vetapalam.
,,	Pundi	13,500	Palasa and Vetapalam.
,,	Sompeta	8,000	Ditto.
East Godavari	Rajahmundry	10,000*	Local factories and Vetapalam.
Guntur	Vetapalam	20,000	Local factories.
Nellore	Nellore	..	Ditto.
South Arcot	Panruti	54,000	Ditto.
Tanjore	Vilar	15,000*	Panruti.
Trichinopoly	Andimatum	27,000	Local factories and Panruti.
,,	Muthukulam	27,000	Ditto.
,,	Udayarapalayam	20,000	Ditto.
Malabar	Angadipuram	13,500	Calicut and Quilon.
,,	Azhikkal	10,000	Mangalore, Calicut and Quilon.
,,	Calicut	60,000	Local factories.
,,	Cannanore	37,500	Mangalore, Calicut and Quilon.
,,	Edakulam	6,000	Quilon.
,,	Melature	24,000	Calicut and Quilon.
,,	Tellicherry	8,000	Mangalore, Calicut and Quilon.
,,	Vaniambalam	19,000	Calicut and Quilon.
South Kanara	Coondapoor	8,000	Mangalore.
,,	Kanhangod	5,000	Mangalore and Quilon *via* Trichur.
,,	Kasaragod	56,000	Local factories, Mangalore and Quilon *via* Trichur.
,,	Kumbla	8,000	Mangalore and Quilon *via* Trichur.
,,	Mangalore	10,000	Local factories.
,,	Nileshwar	6,000	Mangalore and Quilon *via* Trichur.
,,	Udipi	10,000	Mangalore.
Bombay.			
Kanara	Ankola	6,000	Mangalore.
,,	Honavar	6,000	Do.
,,	Kumta	4,500	Do.
,,	Karwar	5,000	Do.
Ratnagiri	Malvan	1,28 000	Local factories.
,,	Ratnagiri	7,000	Malvan and Vengurla.
,,	Vengurla	67,000	Local factories.
Travancore State.			
Trivandrum	Nedumangad	5 000	Local factories and Quilon.
Quilon	Changanasery	16 000	Ditto.
,,	Kattakada	55,000	Ditto.
,,	Kilimannoor	45,000	Ditto.
,,	Kottarakara	75,000	Ditto.
,,	Kundara	20,000	Ditto.
,,	Parakcode	18,000	Ditto.
,,	Punalur	25,000	Ditto.
,,	Thoduvetty	60,000	Ditto.
Kottayam	Muvattupuzha	18,000	Ditto.
Cochin State.			
Cochin State	Cochin	10,000	Quilon, Mangalore and Calicut.
,,	Irinjalakuda	60,000	Quilon and Mangalore.
,,	Kunnamkulam	25,000	Ditto.
,,	Trichur	100,000	Quilon, Mangalore and Calicut.
Bengal.			
Midnapore	Contai	25,000	Local factories and Palasa.
Orissa.			
Ganjam	Chhatrapur	5,000	Palasa.

* To be verified.

APPENDIX XI.

List of certain important distributing markets for cashew kernels.

Name of markets.	Estimated quantities of kernels handled annually. (Maunds).	Processing centres from where supplies are drawn.	Important markets to which the kernels are generally despatched.
Malvan (Ratnagiri) .	8,000	Local factories .	Bombay, Karachi, etc. besides exports to foreign countries including the United States of America, the United Kingdom and other European countries, Australia, etc.
Vengurla (Ratnagiri).	9,000	Local factories .	Ditto.
Bombay . . .	30,000	From factories at Malvan, Vengurla, Mangalore, Calicut, Quilon, etc.	To all important markets in Central and Northern parts of India and in limited quantities to foreign countries.
Mangalore (South Kanara).	80,000	Local factories .	Mainly to markets in foreign countries particularly the United States of America and to a certain extent to Bombay.
Calicut (Malabar) .	11,500	Local factories .	Ditto.
Alwaye (Travancore).	8,000	Local factories .	Ditto.
Alleppey (Travancore)	7,000	Local factories .	Ditto.
Quilon (Travancore) .	292,000	Local factories .	Ditto.
Panruti (South Arcot)	10,000	From the surrounding areas.*	Madras, Trichinopoly, Madura, Bangalore, Hyderabad (Deccan), etc.
Vetapalam (Guntur) .	8,000	Local factories .	Nagpur, Delhi, Lucknow, Cawnpore, Patna, Peshawar, Simla, etc.
Palasa (Vizagapatam)	11,000	Local factories .	Calcutta, Cawnpore, Nagpur, Ajmer, Delhi, Lahore, Peshawar, etc.

*In the Panruti area the processing of cashew kernels is largely carried out as a cottage industry.

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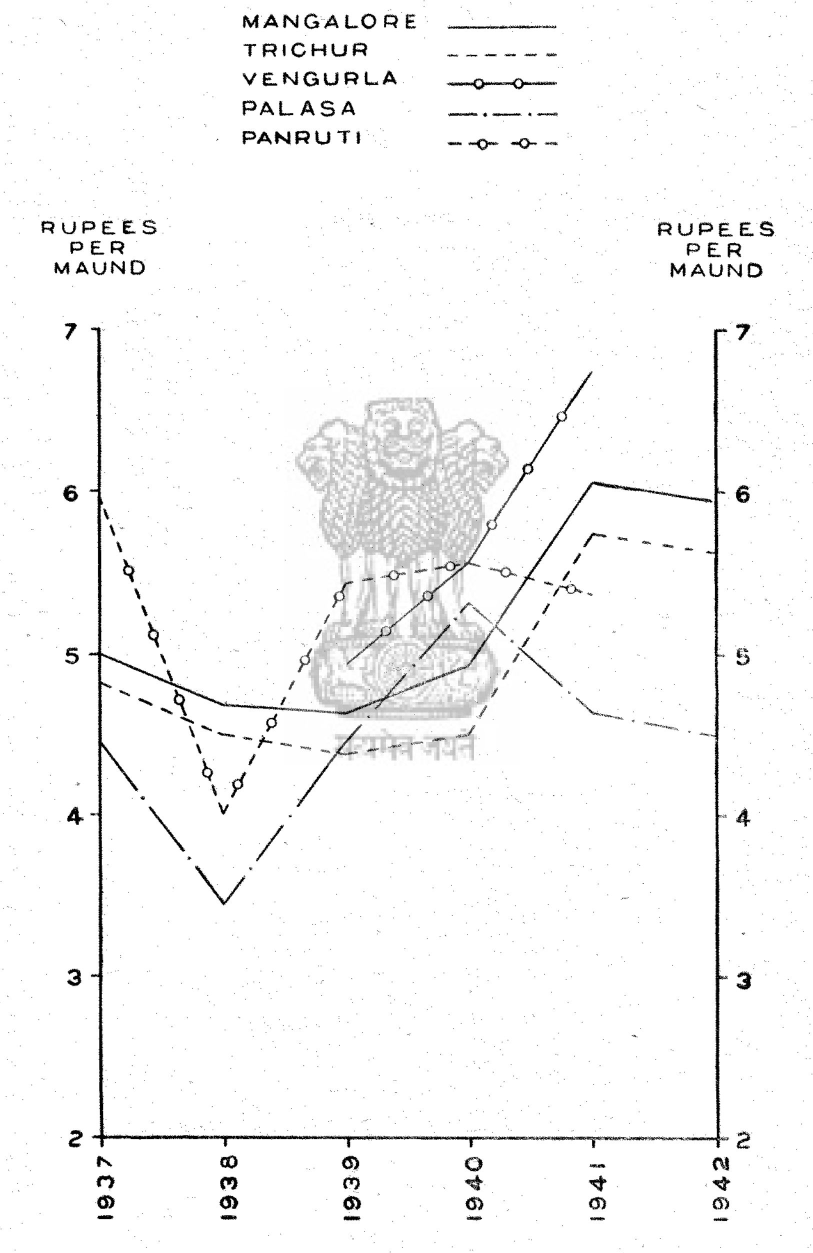
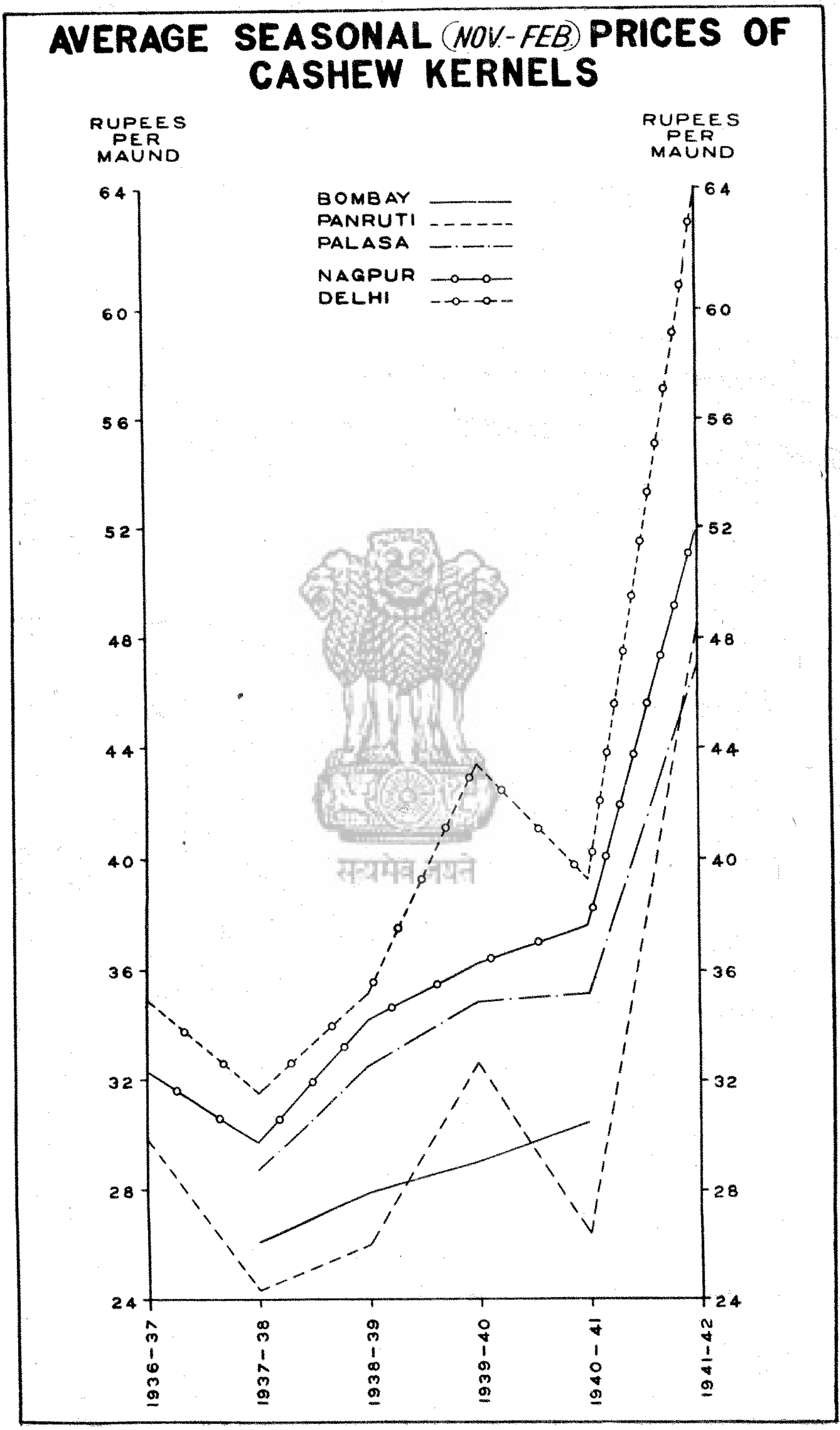


AVERAGE SEASONAL (MARCH-JUNE) PRICES OF CASHEW NUTS


AVERAGE SEASONAL (NOV.-FEB.) PRICES OF CASHEW KERNELS
RUPEES PER MAUND
RUPEES PER MAUND
BOMBAY
PANRUTI
PALASA
NAGPUR
DELHI
64
60
56
52
48
44
40
36
32
28
24
1936–37
1937–38
1938–39
1939–40
1940–41
1941–42

SHELLING OF CASHEW NUTS.

PEELING OF CASHEW KERNELS.

Shelling of Cashew Nuts in One of the Factories of Messrs. Peirce, Leslie and Co. Ltd.

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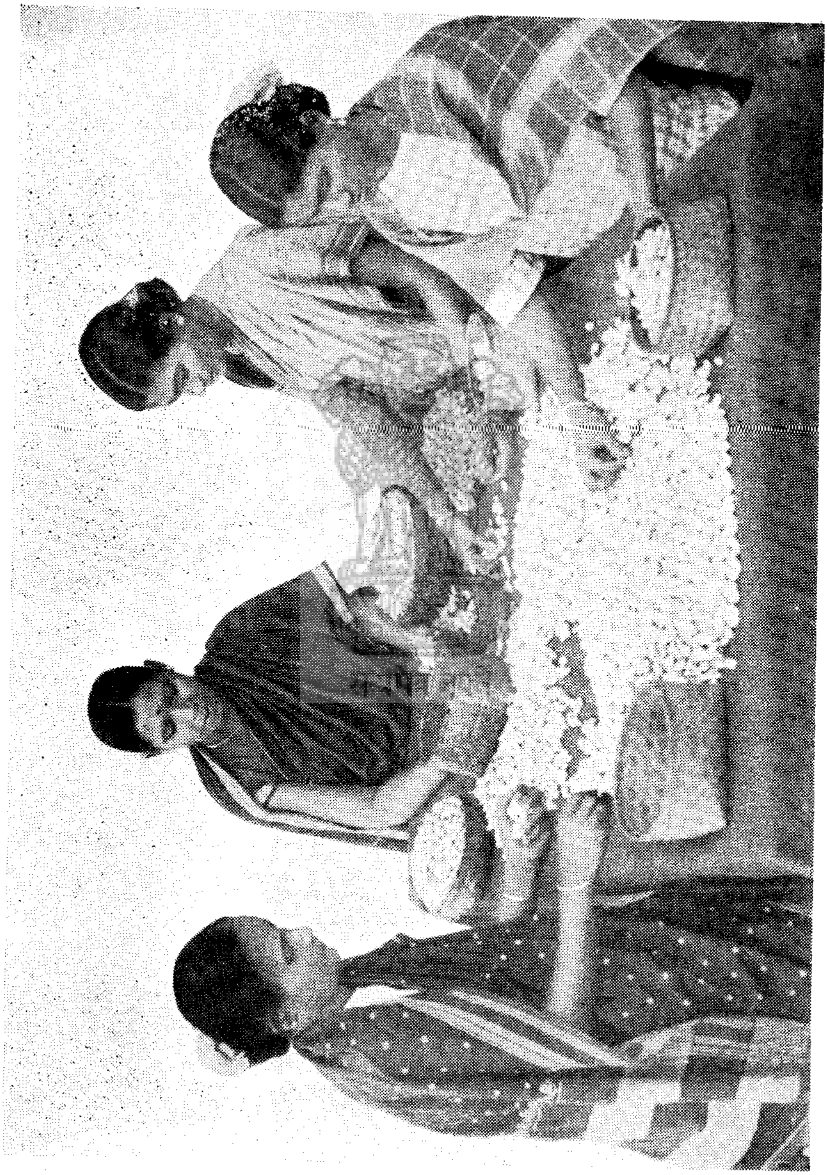

Grading of Cashew Kernels.

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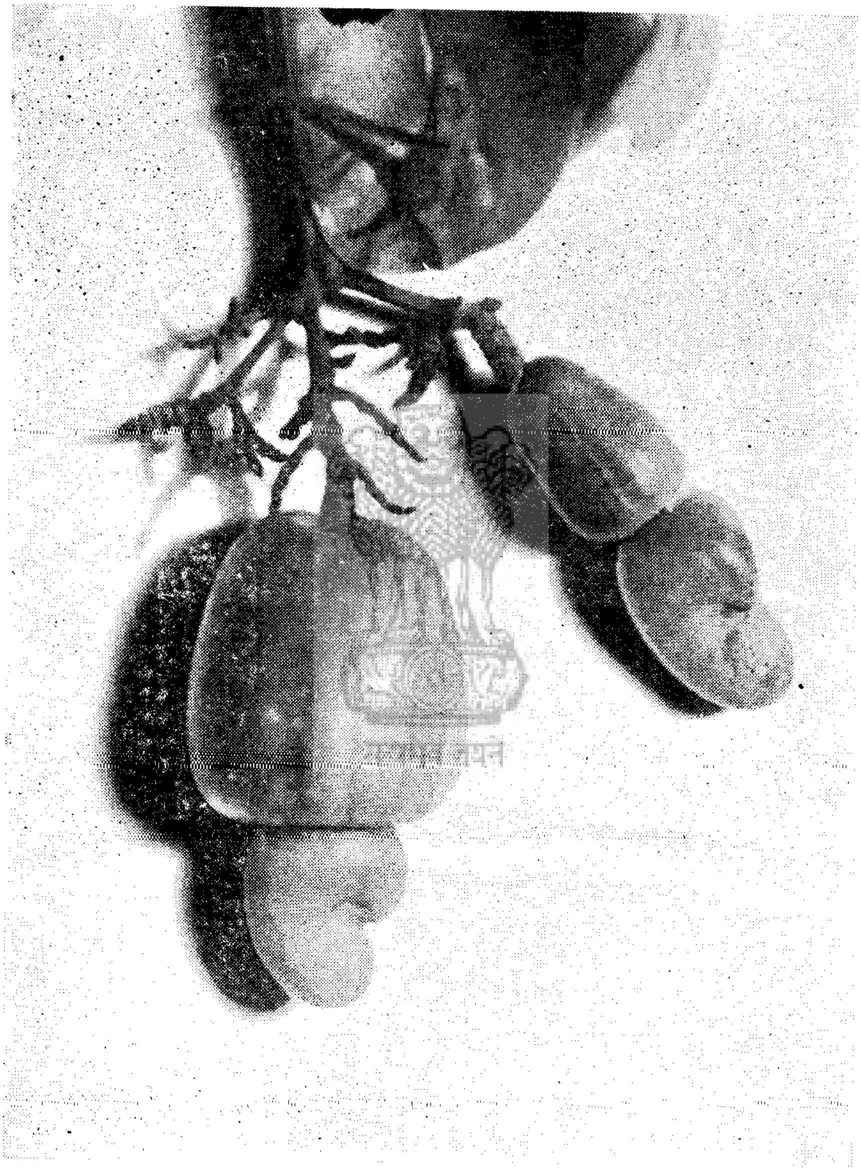

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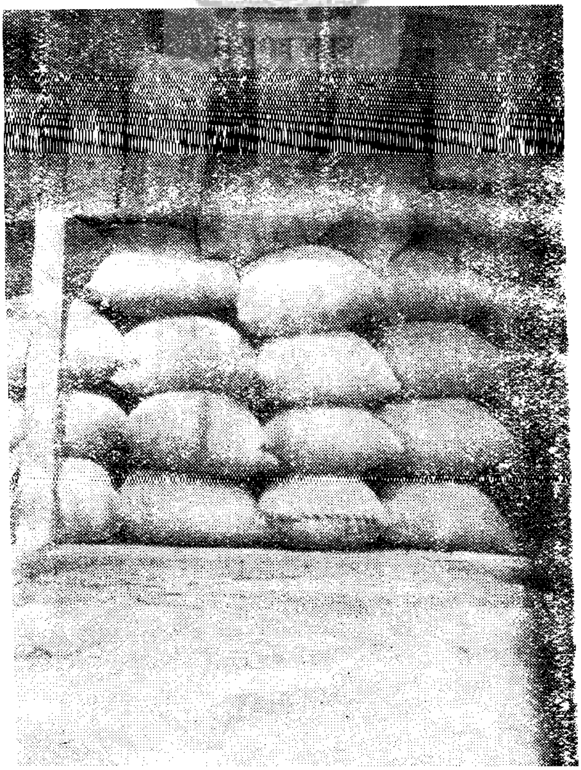
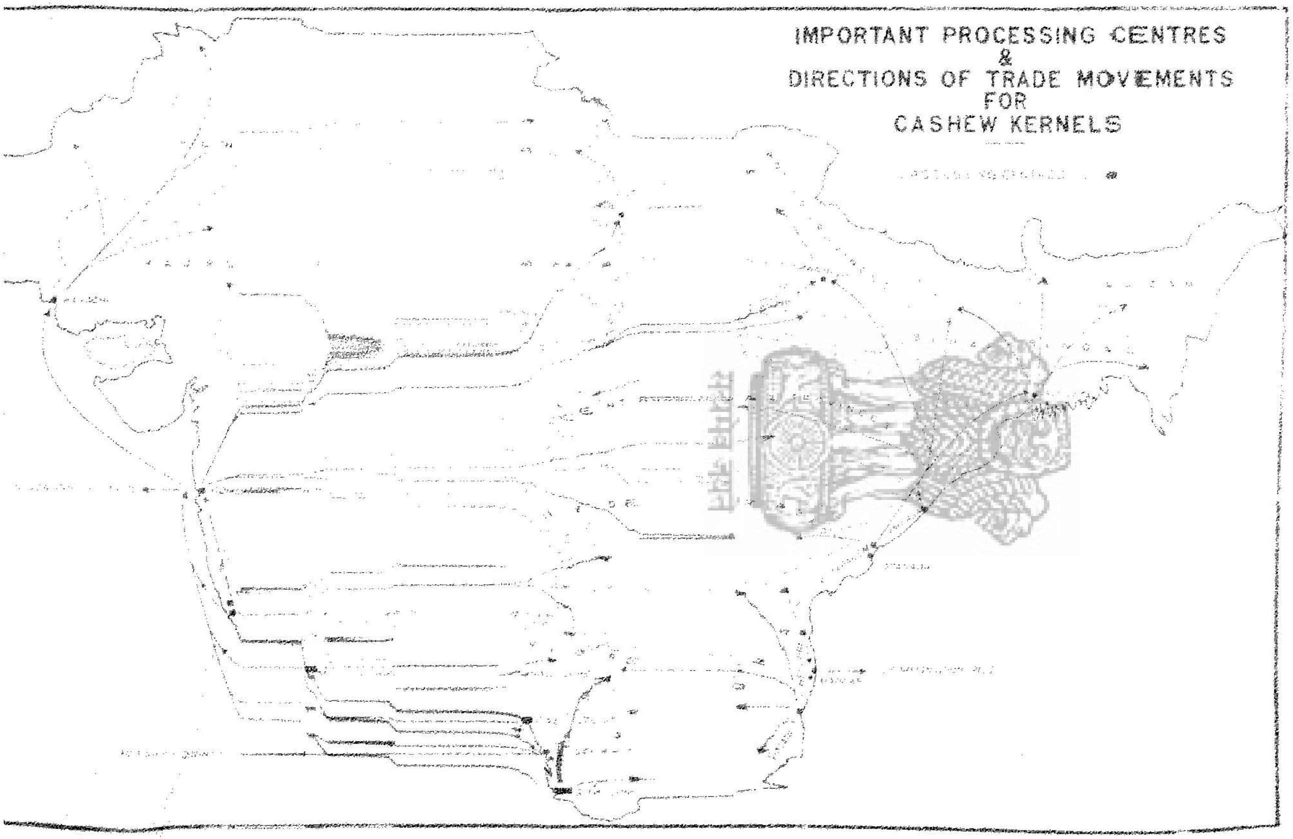
Cashew nuts attached to the swollen peduncles or Cashew apples,

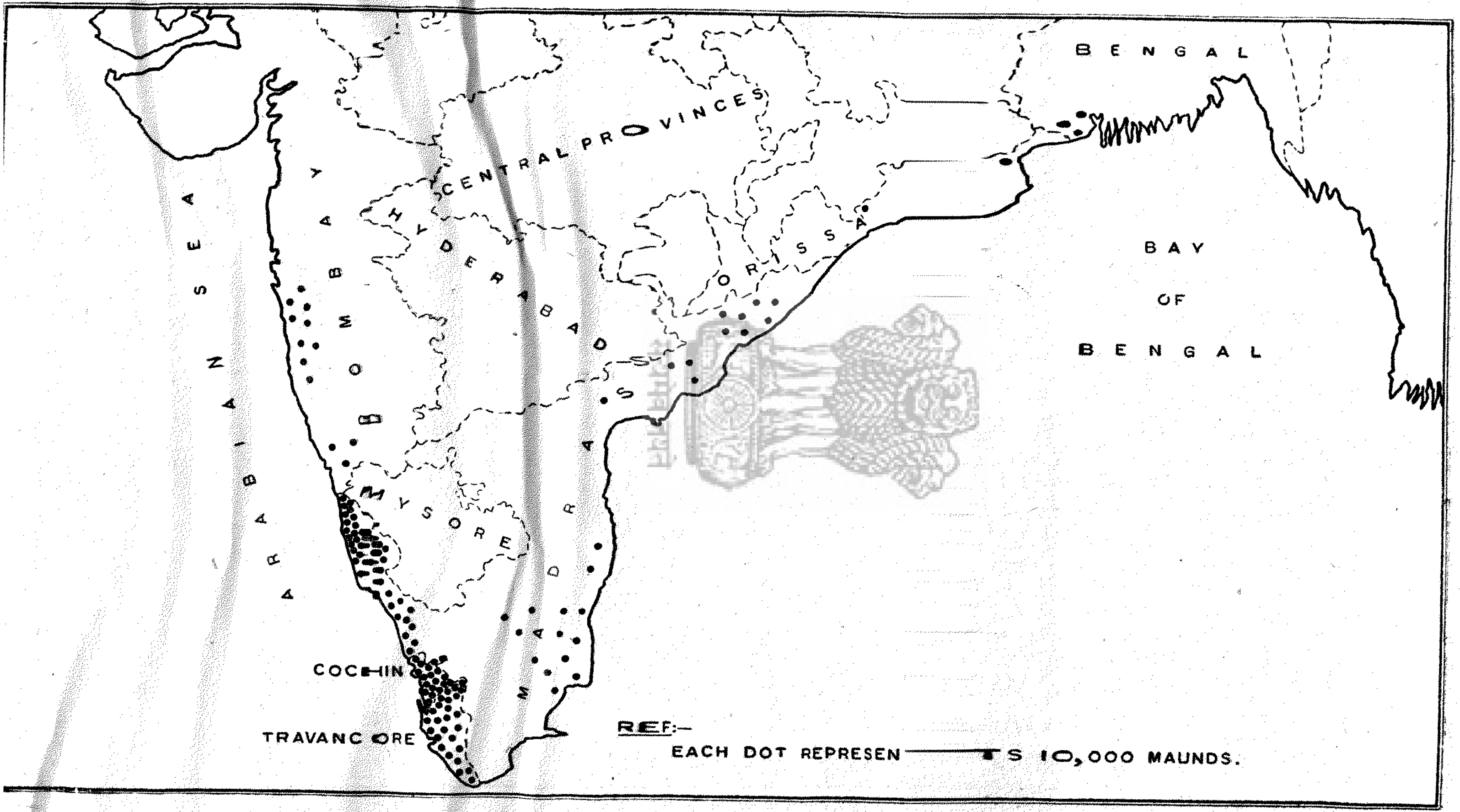
Extraction of Cashew shell oil in Panruti in drums.





IMPORTANT PROCESSING CENTRES
&
DIRECTIONS OF TRADE MOVEMENTS
FOR
CASHEW KERNELS

Distribution of Cashew nuts production in India.



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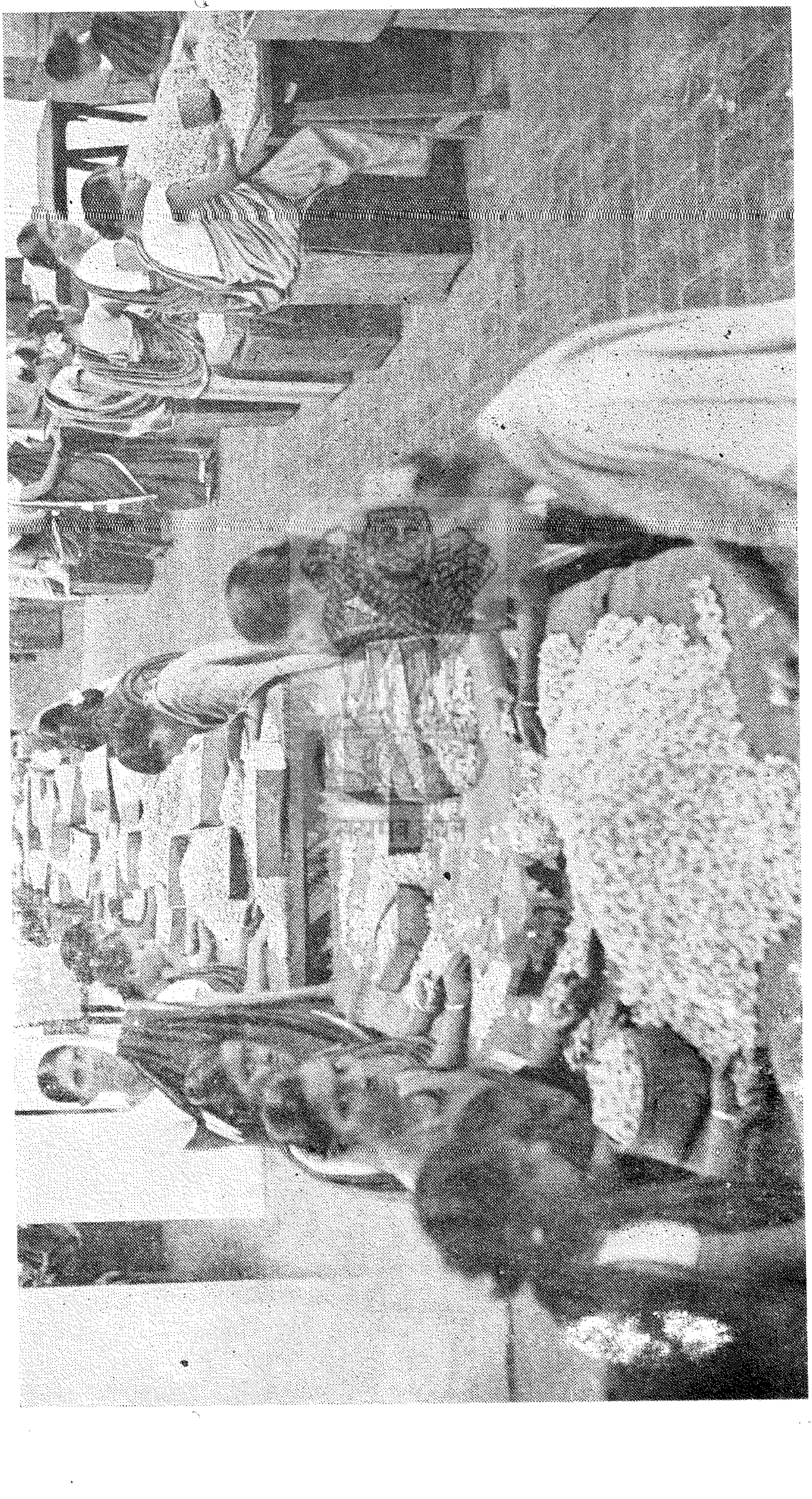
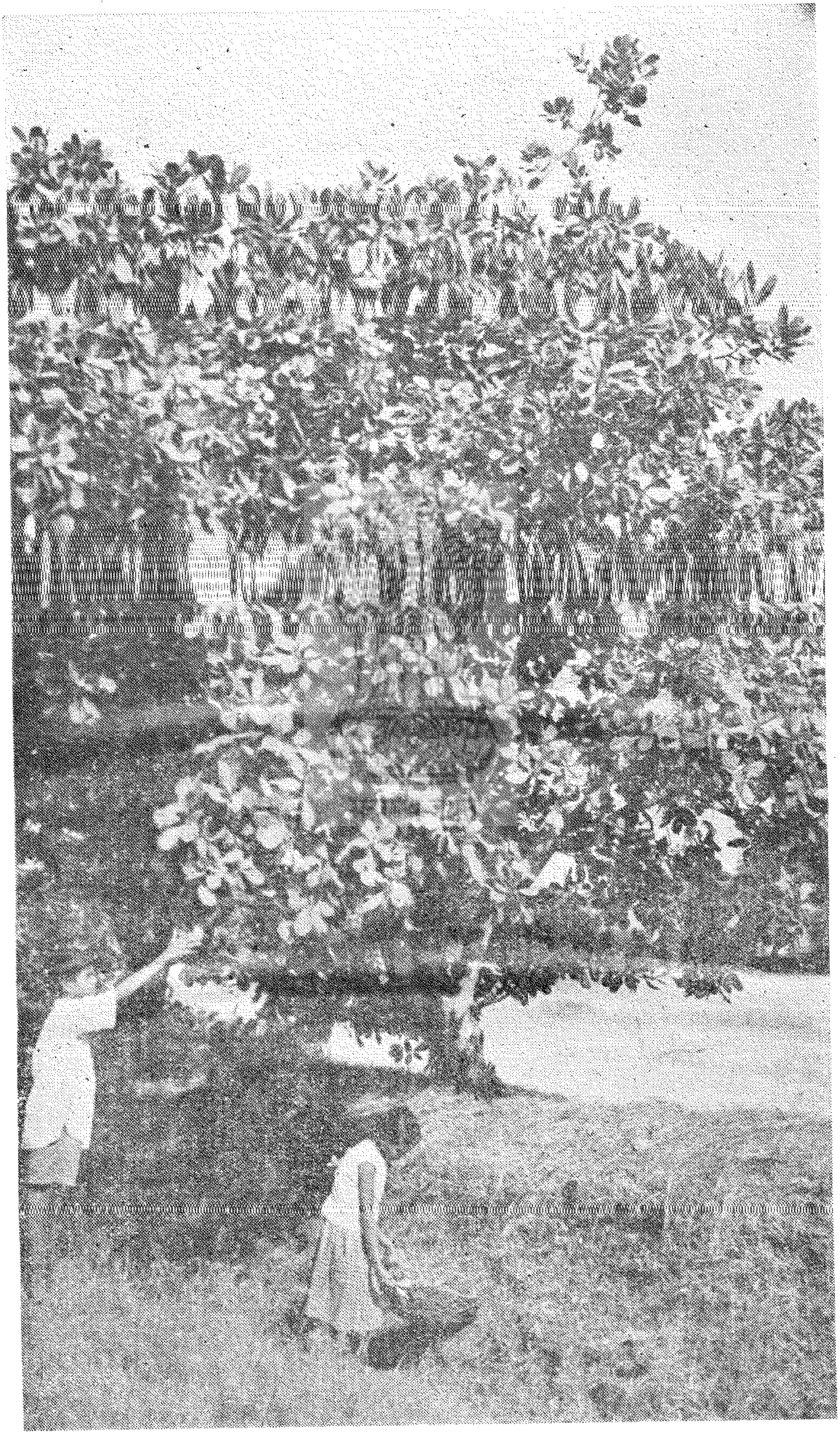


Grading of Cashew kernels in a large factory on the West Coast.

[*Frontispiece.*



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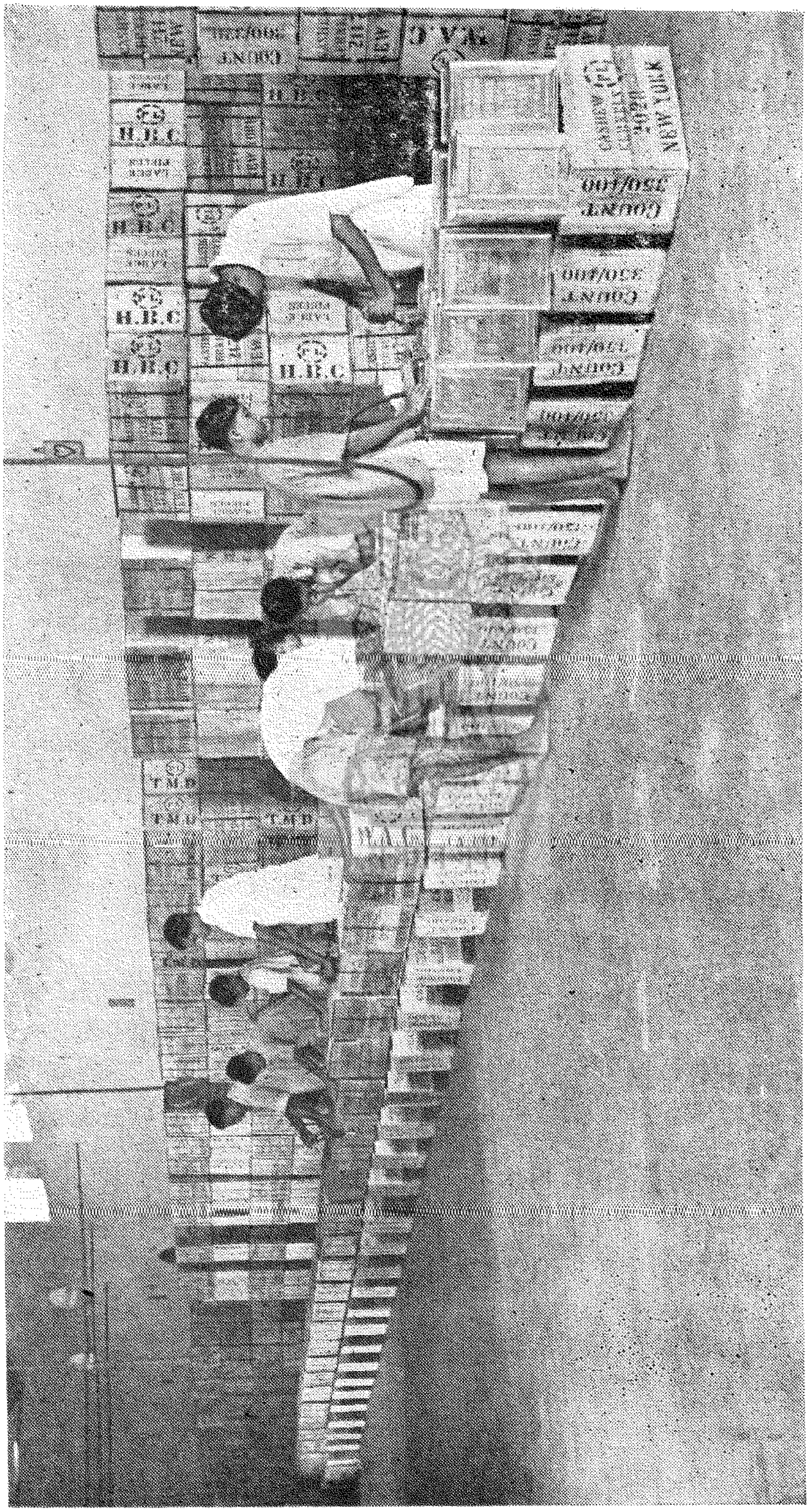
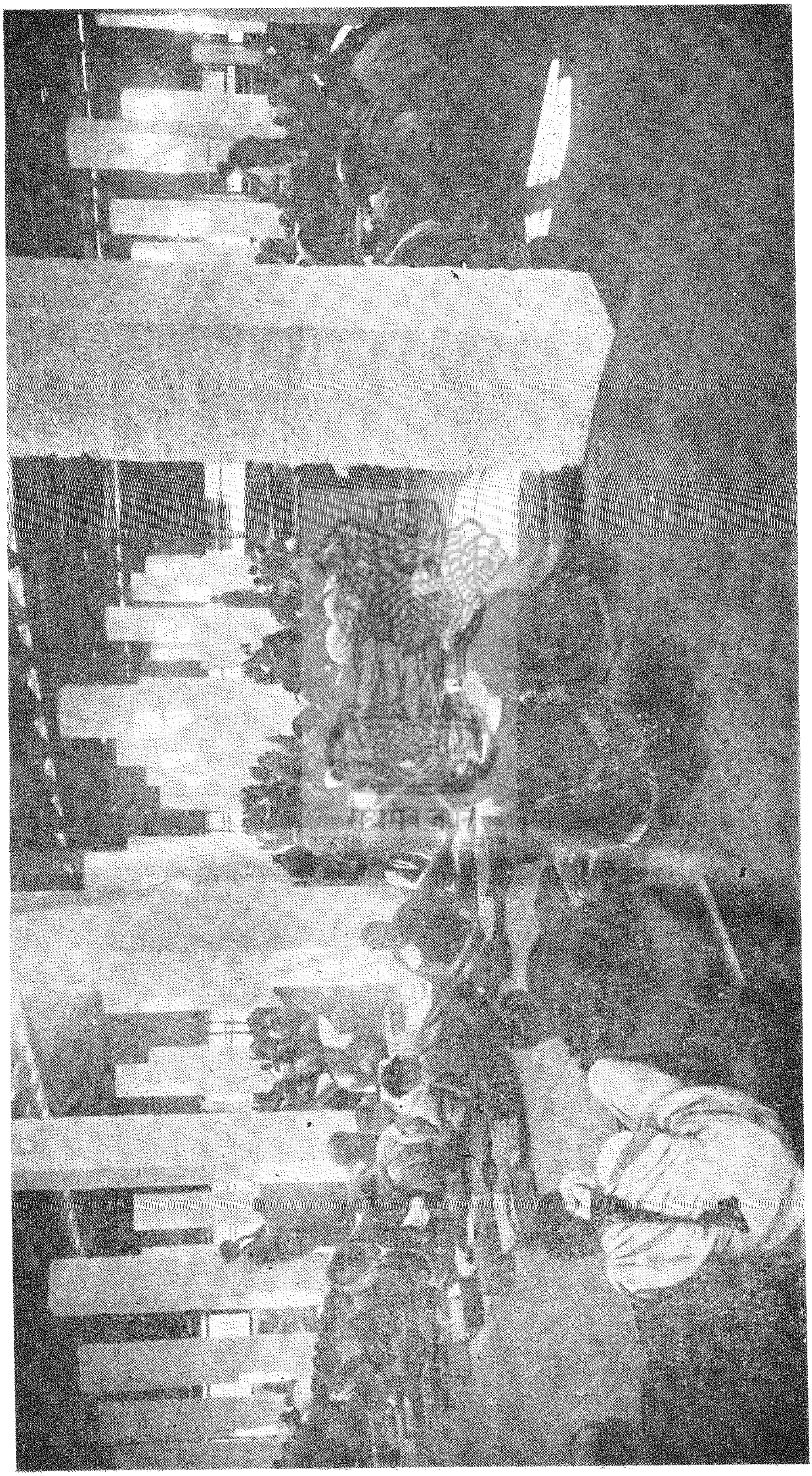
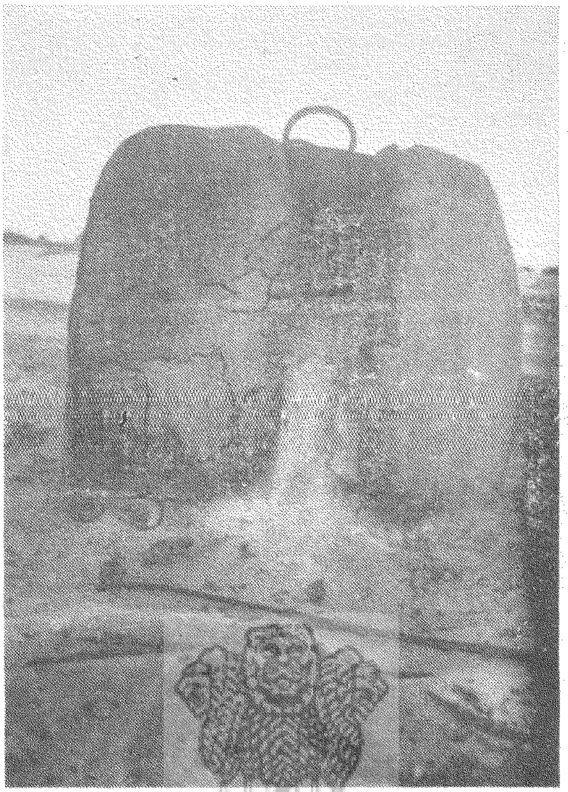


PACKING OF KERNELS.



Peeling of Cashew kernels in a large factory on the West Coast.



Earthen oven used for roasting Cashewnuts.

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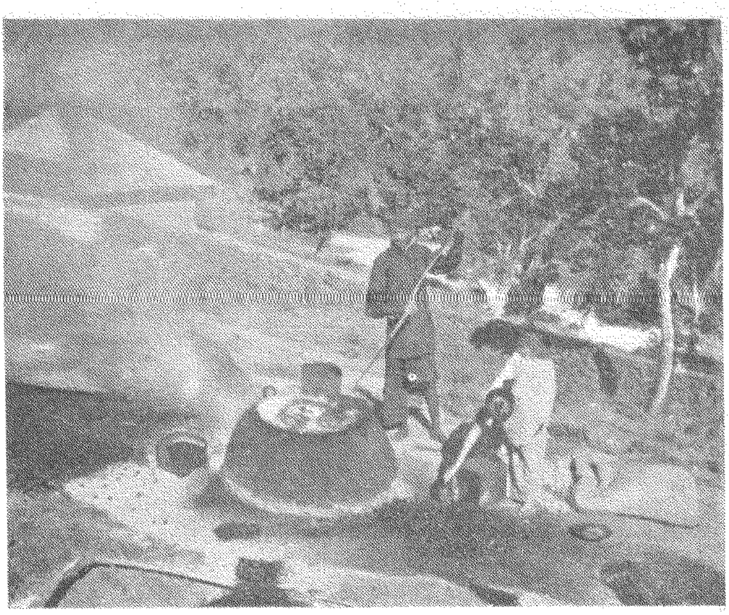
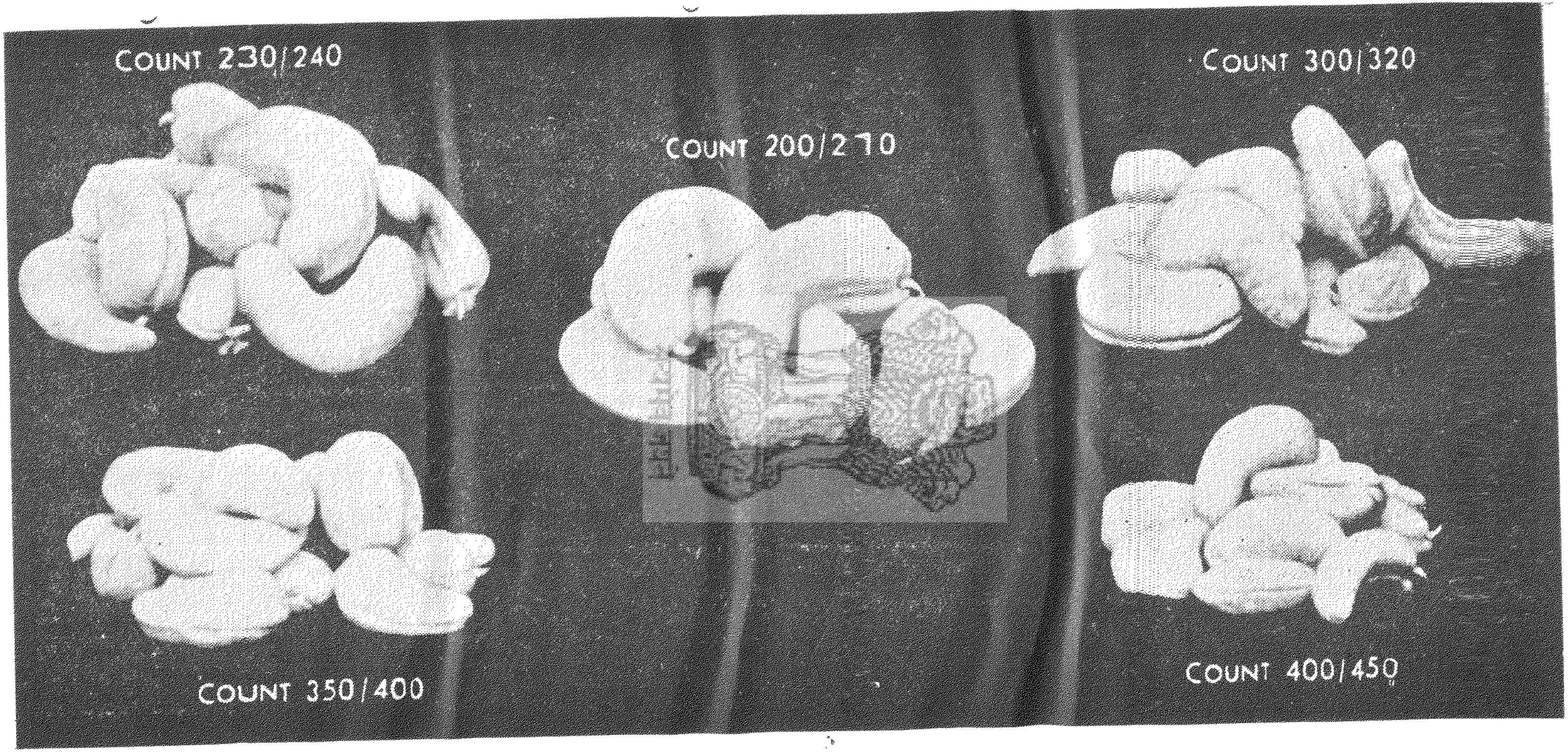
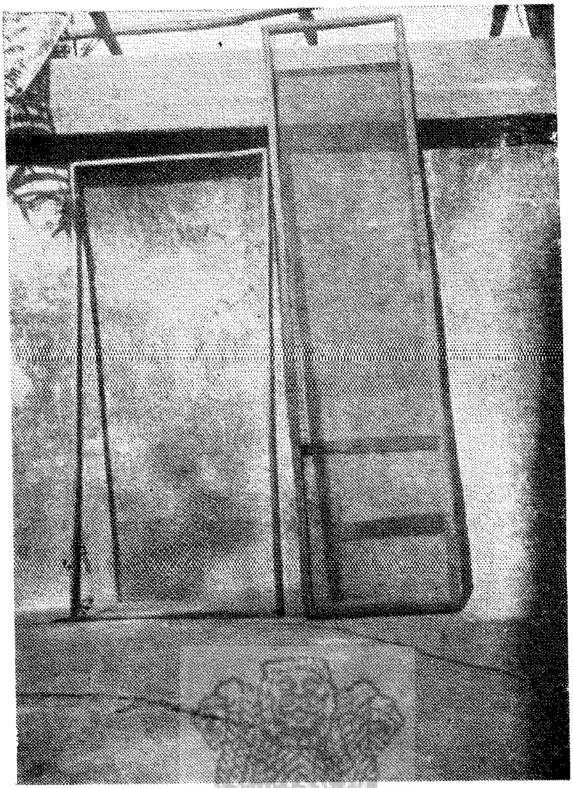
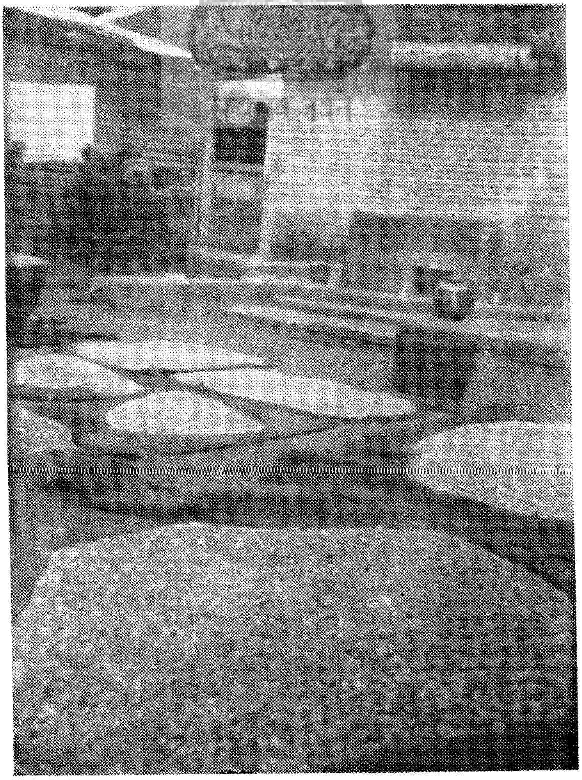




AMERICAN STANDARDS FOR "WHOLE" KERNELS.



SIEVES USED FOR GRADING SMALL BROKENS.



HEAPING SEPARATELY WHOLES, SPLITS, BUTTS AND SMALL BROKENS BY A PROCESSOR.

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